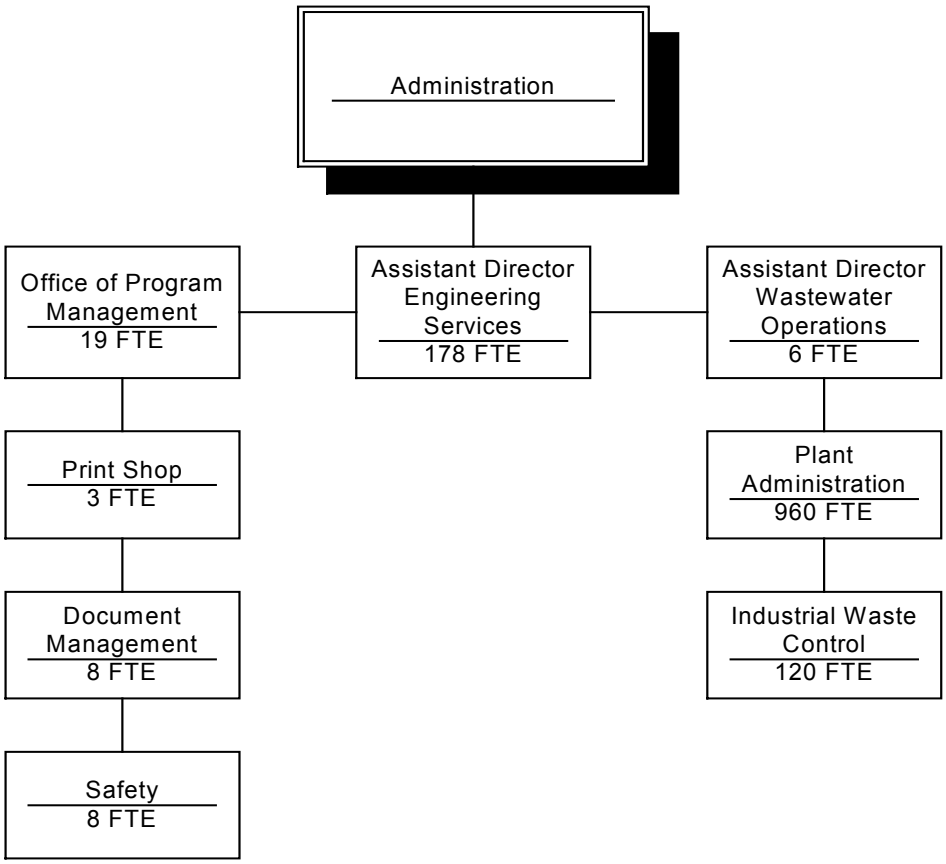
SEWERAGE



AGENCY MISSION

The Water and Sewerage Department will exceed our customers' expectations through the innovative treatment and transmission of water and wastewater that promote healthy communities and economic growth.

Sewage Disposal System Goals

1. To implement the policies of the Board, Charter requirements and Federal mandates for supplying water and sewerage services.
2. To provide an adequate level of trained personnel to operate the water and sewerage systems.
3. To inform the public of agency operations, especially with regard to sewerage operations.
4. To obtain timely approvals of grant amendments and/or loan applications from State and Federal agencies.

CURRENT FACILITIES

Sewage Disposal System

The Sewage Disposal System is administratively part of DWSD, but maintained as a separate fund in the City of Detroit Accounting System. DWSD operates one wastewater treatment plant which is located at 9300 W. Jefferson. This facility serves approximately 2.9 million people in Detroit and seventy-seven other communities in southeastern Michigan. DWSD's sewer system originated in 1836, and today consists of 14 pump stations, three storm water detention basins and a total of 3,000 miles of sewer lines that carry rainwater and wastewater to the Wastewater Treatment Plant – the largest single-site wastewater treatment facility in the country.

The plant has the capacity to treat a maximum flow of 859 million gallons per day (mgd) of sanitary sewerage and a capacity to treat up to 1,520 mgd of a combination of sanitary and storm flow while consistently meeting or exceeding permit requirements for effluent quality. The plant also produces approximately 1,000,000 wet tons of wastewater residuals each year which are either incinerated in compliance with applicable air pollution control laws or transported to commercially operated landfills in western Wayne and Macomb Counties.

FIVE YEAR HISTORY

Fiscal Year 2002-03

Plant-wide Roof Repair & Replacement $6,789,328

This project involved the repair and replacement of leaking, damaged, or deteriorating roofs and roofing systems throughout the department to bring them up to standard. The work involved the removal and replacement of roof build-up, roofing materials, and shingle type roofs. The materials removed included flashings, expansion joints, coping, and other materials. This project also involved developing a system for routine maintenance of the roofs based on life expectancy.

Sewage Metering - Primary Measuring Device Improvements - Group No. 2 $2,177,797

This project involved rehabilitation and equipment replacement at four sewage-metering facilities to bring them up to the department's standards. The work involved removing and installing a new open cut channel flow metering system at the DRP-S-1 metering facility site, and replacing the existing magnetic flow metering system at Meter Pit AP-S-2, Meter Pit DN-S-4 and Meter Pit DN-S-5. Transducers, controllers, instrumentations, software, transmitter cabinets, and flushing water vaults were included in the new open channel flow metering system and recording instruments, piping, sump pumps, new lighting systems, knife gate valves, meter cabinets, and

appurtenances in the magnetic flow metering system. Meter Pit DN-S-4 also included manholes.

These four metering facilities are located in Detroit, Allen Park, and Dearborn. The equipment replaced included metering devices, ventilation equipment, lights, remote telemetering equipment, and all associated wiring and devices. Other work included cleaning and waterproofing the meter pits, and installing flushing water vaults.

Suburban Sewage Primary Measuring Devices Improvements-Group No. 1 $1,715,930
This project involved the rehabilitation of suburban sewage metering facilities in Centerline, Sterling Heights, Rochester and Dearborn, and two facilities at the Mistersky Power Plant. Consultant services provided under this project involved the selection of Supervisory Control and Data Acquisition (SCADA) equipment. The SCADA equipment was installed at each of the metering facilities to provide DWSD with accurate information on sewage inflow and customer usage. A post rehabilitation analysis was performed in which the consultant compared the flow data of the SCADA equipment to the flow measuring equipment used during the study. The consultant also performed the necessary work for the preparation of contract documents.

Fairview Station Rehabilitation $7,170.260
This project involved the replacement of the Fairview Pumping Station No. 2 pumping unit. This unit was replaced with a new 72-million gallon per day (mgd) pump. The pump replacement included the piping connections, drive shaft, motor, LCI variable frequency control, isolation transformer, full speed bypass starter, and architectural rehabilitation. The work completed during this project included building walls; installing windows, doors, and ventilation louvers; replacing the roof and a compressed air system; painting the interior; and, removing asbestos insulated piping and a buried fuel oil tank.

Computer Assisted Mapping – Detroit $2,843,127
This project involved the conversion of 830 Detroit Water & Sewage (DWSD) Section Maps (657 of which were sewer section maps) to computerized digital files before further deterioration of the hard copies occurred. The work included the creation of skeletal databases for the maps and sewers pipes smaller than 24-inches in diameter. Converting the data required collecting 44,600 segments of sewer pipe including the size, material, date installed, and location of the pipe and linking the data to the corresponding segment of pipe in the database. Work also included entering all field book index cards for the City of Detroit and Suburban communities into the database, setting up a Modular Geographic Information Systems Environment GeoData Manager database, and providing data entry training to DWSD's Geographic Information System staff and other staff members responsible for linking the database to the maps.

Work was done using a phased approach, in which work was initiated on the most frequently used maps, while building the capability for subsequent phases to enlarge the database, intelligence, operating system modeling, graphics, and other applications needed. This Project was financed jointly by the Water Supply System and the Sewage Disposal System.

Pickle Liquor Spill Containment $1,113,218
This project involved the installation of a secondary containment for four pickle liquor pump tanks, which is required by State and Federal Regulations. The work involved excavating the area between the two sets of pickle liquor tanks and installing concrete floors and walls. Other installations included steel grating floors at the surface, steel walls around the four tanks, two storm water sump pumps, and a pickle liquor sump pump. These installations will create a containment area in case of spillage, rupture, or deterioration of the tanks and provide a means to remove any rainwater that may fall into the excavation area. The work also included painting the tanks, floor, walls, and piping to meet the City of Detroit Code Requirements for proper labeling.

Work completed under change orders included, but was not limited to: coring 10 four-inch diameter holes in the existing concrete slabs of the rectangular pickle tank, demolishing concrete, repairing spall, installing two stainless steel access ladders in the containment area, and installing a 12-inch thick concrete wall at an elevation of 108-feet.

Plant-wide Renovation of Hydraulic Structures $7,262,167
This project involved rehabilitation and replacement of hydraulic structures at the WWTP necessary to handle the increased flow anticipated with the installation of Pump Station No. 2. Hydraulic structure renovation involved constructing control gates consisting of four roller gates, two new stop log gates, and two sluice gates; constructing a sampling station, a stop log storage structure, and eight slots for stop logs; rehabilitating twelve sluice gates and twenty-two stop logs; and converting six sluice gates into two slide gates and four stop logs. The control gates regulate the flow and water levels in the primary treatment system, secondary treatment system, and the junction chamber to meet the hydraulic and permit requirements for the Detroit River Outfall.

Work also included demolishing Movable Dams 3 and 4 and installing new movable dam structures downstream; demolishing and removing deteriorated reinforced steel; sealing the area with 2-inches of granite; repairing deteriorated ceilings and removing 2-inches of unsound concrete; and capping the old concrete surface with at least 2-inches of high strength cementitious material using the gunite technique. The construction of the Movable Dams required the demolition of two conduits, which carried primary flow to the Zug Island Outfall.

Improvements to the system were needed to provide operational flexibility, work efficiency throughout the WWTP, a safe working environment, and Operation and Maintenance cost savings.

Belle Isle Main Pumping Station Improvements $2,032,695
This project involved making the necessary improvements to the Belle Isle Pumping station and related site structures to bring them up to Building Code Requirements. This project involved architectural, mechanical, and electrical work on the existing structures at the Belle Isle Pumping Station. Demolition was done on a selective basis and asbestos-containing materials were removed from the structure. Site alterations and rehabilitation work were also performed. Repairs were performed on roofs, stairs, and ventilation and heating. Sites included in the work were a small office, a transformer building, an underground pumping station of 1,700

square feet, and two open wet wells. Miscellaneous site work of finish grinding, seeding, and concrete walk paving was also done.

Design/Build/Maintain Contract for Emergency Generators $26,080,290
This project involved the purchase of 44 emergency generators (15 for sewage facilities) after Detroit Energy (DTE) announced that the provision of power could not be guaranteed with the coming of the Year 2000 (Y2K). The generators were procured to provide electrical power and maintain services to critical water and sewage system operations after Y2K. The generators will be further utilized as backup for any emergencies. Legal Services were procured to ensure that DWSD would not be in violation of the US Tax Code or jeopardize their tax-exempt status by using the generators to ease power usage during DTEs peak times, which would benefit a non-government entity. This Project was financed jointly by the Water Supply System and the Sewage Disposal System.

Fiscal Year 2001-02

Hubbell/Southfield Combined Sewer Overflow Detention Facility $63,627,018
This project involved the construction of a detention facility/basin to treat and store untreated sewage feeding from the Hubbell and Southfield sewers. The construction of this facility is one of three to be constructed as a part of the Rouge Valley Phase II Combined Sewer Overflow Control (CSO) Facilities. Together, the three facilities will be treating and storing untreated sewage from the west side of the city covering an area of 15,570 acres. This sewage, during wet weather events, was being discharged through five outfalls to the Rouge River.

Work completed under this contract included motorizing the bridge movement of the overhead crane, excavation, modifying the precast tees and supporting beams designed to support 500 pounds per square feet, installing three Direct Operating Panels to the facility's control system, eliminating the disconnect switch, increasing the wire and conduit sizes of the 20HP and 40HP mixer motors, installing a two-wire control system, installing and connecting a new relay panel, extending the Influent and Basin #2 roller gates, installing and backfilling a 4-foot diameter precast concrete manhole, and other related work.

Wade-Trim Associates, Inc. was responsible for providing all Construction Management Services throughout the construction of these basins. This included coordinating the entire construction of the Rouge River Retention Basin Facility to minimize duplication. Wade-Trim was also responsible for providing engineering staff from varying disciplines. Legal services were also provided during the construction phase of this project.

Renovation of Primary Tanks Nos. 1, 2, 3, 4, 11, and 12 $11,951,783
This project involved the removal and replacement of 42 main collectors from 6 cross collectors - rectangular tanks nos. 1, 2, 3, 4, 11, and 12. This project restored the normal primary treatment capacities by rehabilitating deteriorated equipment. The driving unit's concrete slabs to each of the main collectors was removed and replaced. Renovation was completed on ten 12-inch and two 16-inch drain valves at six manholes. Other work included the cleaning of tanks, securing the tanks from flooding, repairing concrete cracks and spalled concrete, cleaning and painting 1,130-ft length of weir troughs, and replacing 64-speed reducers with motors and pivot bases for the six tanks and two additional tanks. The repaired cracked

concrete was completed on 27,000 feet of concrete and the spalled concrete was completed on 3,500 sq. ft of concrete. The eight tanks also received replacement switches, starters, and limit switches.

Sewage Metering Facilities - Primary Measuring Device Improvements Group 4 $1,196,160

This project involved the rehabilitation of 3 of the 37 suburban sewage meter pit facilities. The three metering sites included Metering Facility ST-S-1, Metering Facility ST-S-2, and Metering Facility ST-S-4. Rehabilitation involved the replacement and addition of equipment to standardize the Department's sewage metering facilities. The equipment included metering devices, ventilation equipment, lights, remote telemetering equipment, radios and all associated wiring and devices. This contract also included cleaning and waterproofing the meter pits and installing flushing water vaults.

8' Diameter Frisbee Road Interceptor $2,743,355

This project involved extending the Sewer Interceptor located between Frisbee Avenue and 7 Mile Road. This extension was needed for transporting flow into the 7 Mile Road Combined Sewer Outfall (CSO) Basin. Also, a sewer meter was installed in the Frisbee sewer and modifications were made to the existing flow monitoring system at the CSO basin.

The work consisted of the installation of an 8-foot precast concrete sewer pipe, which connected the Frisbee interceptor to the 7-Mile detention basin. The pipe was installed in the right of way of Frisbee Avenue, Appleton Avenue, Verdun, and Shiawassee Avenue, which will allow for conveying wet weather flow from the interceptor sewer to the CSO basin. Approximately 1,624 linear feet of concrete pipe was installed as well as a reinforced concrete flow diversion chamber. The diversion chamber was installed within the existing interceptor. A reinforced concrete bulkhead was also installed at the backwater gate at the existing sewer outfall. An electronic flow monitoring system was installed at the CSO detention basin building and also in the right of way of Frisbee Avenue, Appleton Avenue, Verdun, and Shiawassee Avenue.

Other work included raising a section of depressed roadway along Shiawassee Avenue including the installation fill and soil erosion control materials and the construction of a new concrete pavement. A 26-foot wide non-reinforced roadway was built. The work required filling, grading, and compacting approximately 745 feet of depressed roadway along Shiawassee Avenue from the CSO Detention Basin Building to Verdun Avenue. The 26-foot roadway included integral curbs, fencing, and guardrailing.

Wastewater Collection System Improvements - In-system Storage $4,991,896

This project involved the modification of in-system storage devices and other related structures for seven of the Combined Sewer Outfall structures. The work involved under this contract included, but was not limited to, the construction of slide gate facilities, the removal of existing back water gates, and construction of control buildings. Other work included rehabilitation of existing structures, site improvements, and associated mechanical, electrical, instrumentation and control work. To maximize the in-system storage during wet-weather events, a hydraulic structure for a totally enclosed hydraulic actuator was constructed within the wastewater collection system. The construction was also

completed for inflatable dams at seven sites within the collection system.

This project was part of a multiple tasked project initiated to fulfill NPDES permit requirements. Each task underwent value-engineering reviews, which was a requirement for grant funding. Services were also provided during the MDEQ review and approval process related to the implementation of the Preferred Plan.

Fiscal Year 2000-01

Seven Mile Combined Sewer Overflow Detention Facility $21,469,283

This project involved the construction of an underground reinforced concrete detention facility between Shiawassee and Berg Road near Seven Mile Road for the purpose of eliminating raw sewage discharge and public health protection. Approximately six acres of property was purchased for this facility. The facilities basin was constructed with a 2.2 million gallon capacity and included approximately 975-linear feet of 9-foot diameter influent sewers. Installations done under this project included a fiberglass reinforced plastic handrail at an elevation of 12-inches, a 12-inch thick wall between shunt and effluent channels, a two-wire control system between the motor actuators and the MCP connect basins, explosion-proof unit heaters and thermostats, two remote control systems for the control building's overhead doors 1-1 and 113B and associated conduit wiring, two 20-amp circuit breakers in lighting panel LP-C to supply 120 volts of power to overhead doors 101 and 102.

Other work completed under this project included modifying wet walls and the basin odor control system, relocating regulating channels thirty (30) feet south of the Seven Mile right of way, connecting the basin's 6-inch diameter sanitary waste line to an existing manhole in the middle of Shiawassee Avenue and providing a second weather seal on the inside leg of the angle guides door jambs.

Puritan/Fenkell Combined Sewer Overflow Detention Facility $21,023,547

This project involved the construction of a 2.8 million gallon CSO detention facility at Puritan and Fenkell for the purpose of reducing direct discharge of untreated sewage into the Rouge River. The basin was constructed below ground of reinforced concrete with approximately 3,200 linear feet of 12-foot diameter influent sewer. Quality control tests were performed on a 12-foot diameter pre-cast concrete influent pipe. Modifications and additions were made with fiberglass reinforced plastic handrails, platforms and stairways.

Installation also included a gate valve and well within the 8-inch water main, a two-wire control system linking the electric motor actuators directly to the Rotork Master Station, bituminous pavement over gravel the road at Redford Cemetery, two direct operating panels to the facility's control system, underground utilities, and additional reinforced concrete storm sewer piping.

Other work included replacing thermostats and unit heaters with ones that are explosion proof, increasing the width of the west wall of the headworks room to 112-inches X 4-inches, and relocating parking areas. The consultant also completed a full forensic review of each basin's structural integrity following the collapse of the roof.

Suburban Sewage Meter Pit Rehabilitation $2,150,789

This project involved the refurbishment of a master sewer meter in Shelby Township. Work included the replacement of obsolete

and unreliable meter pit equipment at 16 meter pit sites in order to standardize all metering systems and the installation of a water main. The equipment included metering devices, ventilation equipment, lights, remote telemetry equipment, radios, and all associated wiring and devices.

Other work completed under this project included waterproofing of the meter pits, the demolition of flushing water vaults, lighting and recording facilities. Work further included installing new flushing water vaults and recording facilities.

Inspection & In-place Rehabilitation of Circular and Non-circular Sewer $7,349,144

This project involved the consultants providing as-needed inspection and in-place rehabilitation of selected sewers using the procedures, methods, and equipment of the cured-in-place pipe process, a process that minimizes traffic disturbance and is considerably more inexpensive than the customary procedure. The process used required all flows to be maintained during the installation and reestablishment of all sewer connections. Slip lining was installed on an existing 48-inch water main on Elizabeth, Witherell and Park Avenue. This main was relocated from Witherell to St. Antoine to facilitate the construction of the new stadiums. Rehabilitation of existing infrastructures was performed on an emergency basis to address deteriorating and/or near collapsing sewer systems. Other tasks performed included the cleaning of sewers, television inspection of liners and site clean up.

Construction Management Services for Overhaul of Major Pumping Equipment $4,274,999

This project involved Best American Industrial Services providing construction management services to oversee the repair of equipment at the five water treatment plants, the twenty unmanned water booster stations, and the fourteen unmanned sewage pumping stations. The contractor solicited proposals from specialized service contractors, analyzed the competitive bids and made recommendations for bid award. They further provided skilled trade services for the procurement of equipment and materials for the additional pumping equipment rebuilding service and for other related tasks as requested by the project engineer.

The contractor also conducted regular progress meeting to review procedures, schedules and process problems. They also monitored accounting and costing and any variance in budget and cost were reported to project engineer.

Lateral Sewer Replacement Bounded by Woodingham/ 8 Mile, Santa Barbara/ Pembroke $1,752,594

This project involved the replacement of deteriorating or impaired sewers in the area bounded by Woodingham, Eight Mile, Santa Barbara and Pembroke. The sewers in this area were replaced with I.D. sewer pipes and consisted of 1,083-lateral feet of 12-inch sewer pipe, 674-lateral feet of 15-inch sewer pipe, 979-lateral feet of 18-inch sewer pipe, 847-lateral feet of 21-inch sewer pipe, 775-lateral feet of 24-inch sewer pipe and 1200-lateral feet of 30-inch lateral sewer pipe.

Lateral Sewer Replacement – Palmer Woods Area $ 1,049,396

This project involved the installation of new lateral sewers in the Palmer Woods area. The new sewers consisted of 13,500-linear feet of lateral sewers, which included sizes from 12-inches to 36-inches in diameter and were installed at a 10-feet depth. Construction also included all sewer

appurtenances, connections, the televising of existing sewer surface restorations and any other related work.

Fiscal Year 1999-2000

Southfield Sewer Rehabilitation $18,242,091

This project involved the construction of approximately 3, 700 linear feet of 10' diameter bypass sewer tunnel between Warren and Kirkwood Avenues. This bypass sewer tunnel replaced the original sewer located under the Southfield Expressway between Paul Street and Kirkwood Avenue, south of Warren Avenue, which was found to be so distressed during the walk through inspection that it was backfilled and abandoned. Further work included the installation of shotcrete lining through a temporarily braced section of sewer at Dover Avenue and the construction of an equipment access shaft. The existing Southfield Sewer Lining between Schoolcraft Avenue and Joy Road was also patched and an equipment access/flow control structure was constructed at Plymouth Road.

Removal, Remediation, and Installation of Underground Storage Tanks $430,877

This project involved the removal of eight underground storage tanks at Lake Huron Plant, Water Works Park, Springwells, Ford Road Station, Wastewater Treatment Plant, and Southwest Water Plant, with associated site clean-up and required disposal of contaminated soil and preparation of necessary regulatory reports. The work further involved the installation on nine new underground storage tanks with associated appurtenant systems, piping, leak detection, fuel dispensing and control systems. This project was initiated and completed to comply with federal underground storage tank regulations and the State of Michigan Underground Storage Tank Regulatory Act (PA423).

Change orders one and two involved the removal and disposal of 1440 cubic yards of contaminated soil, contaminated water removal and disposal, and asphalt and concrete paving at the sites. It also provided for additional professional environmental services as mandate by the Michigan Department of Natural Resources.

Centralized Air Compressor Facility – WWTP $3,958,438

This project involved the construction of a steel building approximately 46' x 53' x 25' high on a pile supported concrete foundation including adjacent exterior sewer and pavement work. Work completed during this project included the installation of four 2 1/2" diameter conduits from the motor starters in the switch house to the central air compressor building totaling 2120 feet. It also included installation of an 18" x 12" Catch Basin in the new concrete pavement, installation of two 6" diameter and 6' long Bollards with 3/4" x 9" x 9" plate welded at the bottom and filled with concrete to protect the compressors, and installation of 3" gate valves in the existing secondary water line.

Other work included rerouting a 4" PVC drain pipe and two 1/2" copper water supply lines, removal of a 10CB21 beam and installation of a new beam, repairing leaks in two 8" underground Ash lines of the West Ash System in Complex I. The Motor Control Center was relocated from the Electrical Building to the primary influent pumps. Windows were modified by installing corrugated metal siding and new matching face brick to window openings at the West and North walls of the chemical building and the filer building.

Southfield Sewer Investigation $4,609,522
This project involved a joint venture of Walbridge Aldinger and NTH Consultants providing all construction management and engineering services necessary to plan, coordinate and execute a comprehensive, walk-through inspection of the entire length of the Southfield sewer and the Hubbell-Southfield outlet sewer. The total sewer footage inspected was approximately 10.5 miles with the vast majority, approximately 8 miles, located directly beneath the Southfield Expressway traffic lanes.

This project was divided into two phases. Phase I, comprised the planning stage where all activities and construction items, which were required to implement the inspection, were determined. Phase II included the preparation of contract documents for the construction of all flow control structures and modifications, and the actual performance of the walk-through inspection.

Fiscal Year 1998-99

Computer Assisted Mapping – Suburban-Phase I $1,052,000
This project involved the conversion of several sections of DWSD from map usage to a Digital Computer Graphics System. The conversion connected features of the system to a skeletal database conforming to the City's effort of standardizing computer platforms, software, and databases, which permitted the sharing of information and the stabilization of efficient satisfactorily working conditions. In addition, Master Meter Drawings, Gate Book sheets, Pressure Reducing Valves, and Wastewater Control Facility drawings were scanned and indexed to preserve information before further deterioration occurred. This Project was financed jointly by the Water Supply System and the Sewage Disposal System.

Sewer System Improvements for American Axle in Holbrook-Russell to St. Aubin $72,959
This project involved the replacement of an existing sewer located in Holbrook-Russell to St. Aubin. Replacement included approximately 1,450 linear feet of open cut sewer pipe varying in size from 12 to 32-inches in diameter. It also included all appurtenances and related structures.

Eastside Customer Service Center $271,000
This project involved the purchase of land and building at 13297-13301 E. McNichols for use as an East Side Customer Service Center. DWSD previously leased space in the building. The purchase was necessitated when the owner, Detroit Edison, decided to sell the property. The building is a 12,000 square foot one-story structure with brick façade, metal roof overhang and a flat composition deck with a tar and gravel roof. The adjacent parking area accommodates approximately fifty vehicles.

The appropriate DWSD Engineering Section inspected all mechanical and electrical systems. As a result, new HVAC units were installed. NTH Consultants, Ltd. conducted a Level I environmental assessment and determined that the property contained no environmental problems or concerns. This project was financed jointly by the Water Supply System and the Sewage Disposal System.

Oakwood Sewage Pumping Station Improvements $5,911,000
This project involved the rehabilitation of the electrical system, pump motors and accessories, oil removal system, HVAC System and other miscellaneous improvements to the Oakwood Sewage Pumping Station.

The work involved the removal of the existing 4800 volt switchgear and high voltage wiring in the pump motors in the Switch House Switch House and the installation of a new 4800 volt, split bus power distribution system including new circuit breakers and automatic transformer system, new motor starters with controls and wiring, and new 240 volt transformers.

A new motor control center was also installed which included new wiring, a new main control monitoring and alarm panel including instrumentation and wiring. The work also consisted of the installation of two new tube oil skimmers, one transfer pump and connections to the existing 4,000 gallon underground storage tank; the installation of a new duplex pump and piping, site work improvements including a new boiler, three steam fired and two electric unit heaters.

Various structural improvements, including replacing two spiral stairways, architectural improvements to both structures including the roof, office area, toilet, windows, doors, brick work and cleaning concrete and brick masonry surfaces were also completed in this project.

Renovation of Primary Tanks 3, 4, 5, & 6 $2,849,000

This project involved removing fourteen main collectors and two cross collectors which consisted of approximately 17,000 linear feet of metal and non-metal collector chain, drive motors, speed reducers, motor starters, disconnect switches, and other components. Work also consisted of cleaning the tanks, preventing flooding, repairing approximately 8,000 linear feet of concrete cracks and repairing approximately four hundred square feet of concrete spall.

The project also involved the contractor furnishing and installing fourteen new main collectors and two cross collectors, painting two hundred fifty linear feet of weir trough; providing, installing and setting anchors and hanging hardware; demolishing the existing building; removing and disposing of asbestos containing materials; furnishing spare parts; commissioning the equipment; and finally, restoring the work site.

Rouge River Outfall Hydraulic Control & Monitoring Facilities $4,491,000

This project involved the construction of new Hydraulic Control & Monitoring Facilities in Rouge River Outfall at the Wastewater Treatment Plant. Work consisted of demolition of existing sections of the Rouge River Outfall Conduit, demolition of gates and appurtenance equipment at the site of Movable Dam No. 1 and 2 and demolition of the sampling station. The project also involved the construction of four new roller gates, eight stop log slots, four stop logs and a new sampling station.

Work completed under change orders involved the removal of approximately 4,500 cubic yards - tons of sludge, which was discovered when the top of the Rouge River Outfall Conduit was demolished. The contractor also provided and installed one 480-120 volt 2KVA transformer inside each of three L.T.C. Cabinets with two primary fuses for each transformer and one secondary circuit breaker (15 Amp) for each connection. Fifty-four bumper posts at the movable dams and the roller gate structure were also installed. A new reinforced concrete wall south of the new Movable Dam No. 2 was constructed. The contractor also had to locate the power cable encased in the roof slab of the outfall and connect it to a new handhole on the South side of the Roller Gate Structure.

Modification at NI-EA and 7 Mile Relief Sewer Connection $2,163,000

This project involved the construction of a cast-in-place concrete stop gate and access

structure over the existing 12-foot inside diameter NI-EA sewer on Van Dyke at Seven Mile Road, and the design and construction of a temporary support system to facilitate the building of the structure, demolition of a 21-inch concrete reinforced bulkhead in the 17'6" inside diameter NI-EA sewer and the installation of a new removable bulkhead, installation of sewer and instrumentation equipment for a level sensor in an upstream manhole for flow monitoring, traffic control along Van Dyke Avenue during the project, and the repair of a brick eye at the 12'0" inside diameter portion of NI-EA near Mt. Elliot. Work completed under change orders involved the removal of sludge downstream of the existing bulkhead to facilitate a free flow of water and sludge that would have, if not removed, impeded the flow of the upstream sewer, thereby causing sewage build-up.

Raw Wastewater Pump Station No. 2A $143,714,000

This project involved the construction of a self-sinking 750-mgd raw wastewater pumping station with seven pumps and space for an eighth. The pumping station was constructed as a circular caisson extending to hardpan with an internal diameter of one hundred twenty-six feet. An electrical building, a screening building, and eight grit chambers were constructed adjacent to the pump station. The screening building was constructed with seven mechanically cleaned fan screens and space for an eighth. A polymer and ferric chloride chemical storage and feed system, roadways and parking areas, and new ash storage lagoons were also constructed. Junction chambers and tunnels were built to connect the pump station with the existing flow train at the WWTP. The consultant, Metcalf & Eddy provided the engineering and technical services for the project.

Work completed under change orders included the relocation of the line from the trailer to Primary Sedimentation Tank No. 10 in order that sewer service could be provided while tanks No. 8 and 9 were out of service; the installation of support beams for previously installed landing piles for Pump Station 2A; and, additional excavation and concrete underpinning at the Pump Station 2A.

Emergency Repair to the 15 Mile Road Interceptor

The depression created by the damaged interceptor is approximately 70 feet wide by 250 feet long by 40 feet deep. DWSD did mobilize immediately to stabilize the area and protect the nearby area. DWSD installed two 36" by 1600 feet long by-pass pipes and installed pumps in order to pump the flow around the damaged section of the interceptor. It will take some time to determine the cause and to repair the interceptor.

PROPOSED FIVE YEAR CAPITAL PLAN

The capital improvement program for the Sewage Disposal System (SDS) over the next five years is devoted to replacing, rehabilitating or improving existing process facilities at the Wastewater Treatment Plant; construction or installation of new facilities at the Wastewater Treatment Plant; rehabilitating sewage pumping stations and major sewers; construction of retention basins and other combined sewer overflow (CSO) control measures throughout the combined sewer system; replacement of suburban sewage primary measuring devices; replacing or relining deteriorated lateral sewers in the City of Detroit; installing new sewers or rerouting existing sewers to accommodate new development in the Empowerment Zone and throughout the City of Detroit; automating the meter

reading function; and upgrading the instrumentation and process control equipment for the Wastewater Treatment Plant and the sewage collection system.

The SDS capital improvement program includes a number of projects to replace, rehabilitate or improve aging facilities. At the Wastewater Treatment Plant, such projects include renovation of primary tanks and multiple hearth incinerators, replacement of main and intermediate lift pumps, return activated sludge pumps and belt filter presses, improvements to final clarifiers, the purchase and installation of additional belt filter presses, and other rehabilitation/ improvement projects. Sewage pumping stations scheduled for rehabilitation or improvement include the Conner Creek, Fox Creek, Bluehill, Fischer, Clintondale, and Woodmere Stations. The SDS capital program also includes a program for the relining or replacement of deteriorated lateral sewers in the City of Detroit and the construction or relocation of sewers in areas of the city undergoing redevelopment, such as the Empowerment Zone.

The SDS capital improvement program includes several large projects for the construction of new facilities at the Wastewater Treatment Plant. These projects are the construction of the disinfection facilities, the Detroit River Outfall No. 2, and the construction of new scum handling facilities. It also includes the construction of two new primary clarifiers together with the associated equipment and facilities.

The SDS capital improvement program includes a number of projects mandated by state and federal regulations for the control of combined sewer overflows. Three large CSO retention basins have already been constructed. The Lieb and St. Aubin CSO facilities are nearing completion. Connor Creek and Baby Creek CSO facilities are currently under construction. This category also includes the design and construction of an upper Rouge River tunnel, Belle Isle CSO facility and the Oakwood CSO facility. SDS capital program contains large provisions for the CSO program.

The SDS capital improvement program includes a number of projects to take advantage of technology advances. A project currently underway is the instrumentation, process control and computerization program for the Wastewater Treatment Plant and the sewage collection system. Also planned is the installation and implementation of automatic meter reading systems for the commercial and residential meters, in conjunction with the Water Supply System.

CAPITAL RELATIONSHIPS: INTERDEPARTMENTAL AND KEY STAKEHOLDERS

Detroit Water and Sewerage Department has no current or proposed capital projects requiring input from other City Agencies at this time.

GOALS FOR CAPITAL PROGRAM

Sewer Supply System (42)

1. To provide essential, efficient, and user-friendly services by:
   - A. Continuing the expansion and improvement of the Wastewater Treatment Plant to provide a cost and energy efficient treatment facility that meets all water and air quality standards.
   - B. Continuing to construct facilities for the containment of combined sewer overflows, reducing the number, frequency and magnitude of spills to receiving waters.

C. Continuing to replace and rehabilitate suburban wholesale customer primary measuring devices to more accurately measure and bill for wastewater treatment service provided.
D. Continuing to replace those in-city lateral sewers which require an inordinate amount of maintenance or are of insufficient capacity to service customers.
E. Continuing to construct those interceptor and control facilities needed to adequately service all customers.
F. Continuing to computerize departmental functions to reduce costs and improve operations.

RATIONALE FOR CAPITAL PROGRAM

City Charter charges the Department with the responsibility of supplying water, sewage disposal and drainage services within and outside of the City of Detroit. The Department's water treatment, transmission, and distribution facilities and its sewage collection and treatment facilities must be constructed, improved, maintained and replaced in a manner consistent with proper water and sewerage works practices and must meet standards mandated by the Michigan Department of Environmental Quality, Michigan Department of Public Health, and the Environmental Protection Agency. Moreover, the Department must remain capable of meeting its contractual commitments to its customers.

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM

PRIMARY TREATMENT-WASTEWATER TREATMENT PLANT

Primary Treatment projects include the construction of two new primary clarifiers, three scum buildings and one sludge pumping station; replacing main lift pumps to restore the total pumping capacity at Pump Station No.1 and equipment reliability; and replacing trough and weirs at the Primary Rectangular Clarifiers. These projects will also provide for a permanent off-loading facility for grit and screenings and rehabilitating exiting primary clarifiers and existing buildings and utilities.

2004-05	$37,501,000	Balances, Cash and/or Revenue Bonds
2005-06	5,165,000	Balances, Cash and/or Revenue Bonds
2006-07	6,000,000	Balances, Cash and/or Revenue Bonds
2007-08	16,000,000	Balances, Cash and/or Revenue Bonds
Unprogrammed	325,000	Balances, Cash and/or Revenue Bonds

SECONDARY TREATMENT-WASTEWATER TREATMENT PLANT

Secondary Treatment projects include improving the secondary clarifiers and aeration decks, improving the reliability of the aeration decks, replacing intermediate lift pumps nos. 1 and 2 and renovating the cryogenic plants. The work involves improving 25 final clarifiers, resealing the aeration decks, improving the work environment, rehabilitating and replacing equipment at the cryogenic plants and other secondary treatment improvements.

2004-05	$37,149,000	Balances, Cash and/or Revenue Bonds

SOLIDS HANDLING-WASTEWATER TREATMENT PLANT

Solids Handling projects involve completely rehabilitating the incinerator burner trains, main stack bypass dampers, Sludge Thickening Complexes A and B, Sludge Storage Tanks 5 and 6, and their associated control buildings and providing a sludge conveyance system and new scum concentrators to process scum. Other work includes reducing the noise of the Induced Draft fan at Incinerator Complex II, rehabilitating the grounds around Complexes A and B, and refurbishing the existing Scum Incinerator Building to house new equipment.

2004-05	$52,129,000	Balances, Cash and/or Revenue Bonds
2005-06	7,943,000	Balances, Cash and/or Revenue Bonds
2007-08	96,000,000	Balances, Cash and/or Revenue Bonds
Unprogrammed	11,969,000	Balances, Cash and/or Revenue Bonds

DISINFECTION-WASTEWATER TREATMENT PLANT

Disinfection projects involve constructing a chlorination facility, a decholorination facility, and the second Detroit River Outfall (DRO-2). The chlorination facility will allow for tank car storage and DRO-2 will allow the department to treat an additional flow of 1,820 million gallon per day.

2004-05	$18,670,000	Balances, Cash and/or Revenue Bonds
Unprogrammed	5,320,000	Balances, Cash and/or Revenue Bonds

GENERAL PURPOSE

General Purpose projects involve the removal of hazardous materials, building a data acquisition and control systems, renovating the Old Administration and Ragland buildings, and other work done on an as needed basis including various engineering tasks, roof and pavement repairs and roof replacement. Major work under this category is focused on the necessary study, design, and construction work to bring the WWTP into long-term regulatory compliance. This is being accomplished by using a single oversight contract focused on efficiently meeting these regulatory requirements by completing many smaller projects throughout the WWTP.

2004-05	$221,691,000	Balances, Cash and/or Revenue Bonds
2005-06	11,168,000	Balances, Cash and/or Revenue Bonds
2006-07	4,500,000	Balances, Cash and/or Revenue Bonds
Unprogrammed	9,584,000	Balances, Cash and/or Revenue Bonds

SEWERAGE INTERCEPTOR SYSTEM

Sewer Interceptor projects include designing modifications for the suburban sewage meter pits and modifying sewage metering facilities in Shelby Township, Oakland County, and at the Detroit River Paper Company. Other work involves providing aerial photography, strip and area topographic mapping on an as-needed basis.

2004-05	$ 4,857,000	Balances, Cash and/or Revenue Bonds
2006-07	2,000,000	Balances, Cash and/or Revenue Bonds

COMBINED SEWER SYSTEM

Combined Sewer projects include rehabilitating 58 regulators remote facilities, the Conner Creek Station, the Fox Creek Backwater Gate Building, and the Bluehill Pumping Station; performing equipment survey, testing, calibration; and constructing screening, disinfection, and flow regulation facilities and systems. Other construction includes in-system storage devices, a 120 million gallon per day stormwater pump, and a Combined Sewer Overflow (CSO) detention facility along with a pond. Also included in these projects are the development and implementation of a Long Term CSO Control Program.

2004-05	$360,176,000	Balances, Cash and/or Revenue Bonds
2005-06	197,150,000	Balances, Cash and/or Revenue Bonds
2006-07	26,150,000	Balances, Cash and/or Revenue Bonds
2007-08	711,000,000	Balances, Cash and/or Revenue Bonds

LATERAL SEWER REPLACEMENT

Lateral Sewer Replacement projects include in-place rehabilitation of existing sewers using the trenchless pipeline rehabilitation process, participating in the construction of 6,000 linear feet of water mains on the Jefferies Homes Woodbridge Estates, replacing lateral sewers throughout the City, and other lateral sewer work on an as-needed basis.

2004-05	$37,727,000	Balances, Cash and/or Revenue Bonds
2005-06	20,000,000	Balances, Cash and/or Revenue Bonds
2006-07	10,000,000	Balances, Cash and/or Revenue Bonds
2007-08	3,000,000	Balances, Cash and/or Revenue Bonds

PLANNING AND ADMINISTRATION

Planning and Administration projects include improving technology and administration throughout the department by replacing the existing outdated radios, communication equipment, computer equipment, office furniture, and the DRMS project disk storage system. Other technological improvements include migrating the Work Order Tracking functions for maintenance and repair to the EMPAC system; replacing the Customer Billing Information System, the Automatic Call Directing System, and developing and implementing a Geographical Information System.

2004-05	$180,438,000	Balances, Cash and/or Revenue Bonds
2005-06	3,000,000	Balances, Cash and/or Revenue Bonds
Unprogrammed	21,250,000	Balances, Cash and/or Revenue Bonds

Summary of Sewage Disposal System Highest Priority Projects

Project Category	Projected Cost
Primary Treatment - Wastewater Treatment Plant (PT): projects involving rehabilitation/renovations of the primary treatment system	$ 64,621,000
Secondary Treatment - Wastewater Treatment Plant (ST): projects involving rehabilitation/renovations of the secondary treatment system	35,066,000
Solids Handling - Wastewater Treatment Plant (SH): includes various expenditures to meet air quality	154,026,000
Disinfection - Wastewater Treatment Plant (D): projects involving the disinfection facilities at the Detroit/Rouge River outfalls	3,320,000
General Purpose - Wastewater Treatment Plant (GP): includes various design/construction projects benefiting the entire WWTP process	175,668,000
Sewer Interceptor System (SIS): projects relating to the interceptor sewer system	5,500,000
Combined Sewer System (CSS): projects relating to the storage/ discharge/control of the combined storm and sanitary sewage system	1,308,003,000
Lateral Sewer Replacement (LSR): projects relating to the replacement or relining of lateral sewers in the City of Detroit	50,410,000
Planning and Administration (PA): projects relating to the improved management and administration of the Sewage Disposal System	158,462,000
Total Sewerage System Projects - Highest Priorities	**$ 1,955,076,000**

City of Detroit
Proposed Capital Agenda
FY 2005-06 through 2009-10

Sewerage Department

	Project Status	*Timeline*	*Impact on Budget*	*Impact on Staffing*	*Impact on Budget*	*Funding Source*	*Auth Un-issued*	*Budget 2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*Un-Program*	*Rec. 5-Year Plan Total*
Primary Treatment (PT)						R.S.		$37,501	$5,165	$6,000	$16,000			$325	$27,165
Secondary Treatment (ST)						R.S.		$37,149							$0
Solids Handling (SH)						R.S.		$52,129	$7,943		$96,000			$11,969	$103,943
Disinfection Facilities (D)						R.S.		$18,670						$5,320	$0
General Purpose (GP)						R.S.		$221,691	$11,168	$4,500				$9,584	$15,668
Sewer Interceptor System (SIS)						R.S.		$4,857		$2,000					$2,000
Combined Sewer System (CSS)						R.S.		$360,176	$197,150	$26,150	$711,000				$934,300
Lateral Sewer Replacement						R.S.		$37,727	$20,000	$10,000	$3,000				$33,000
Planning/Administration (PA)						R.S.		$180,438	$3,000					$21,250	$3,000

Total by Funding Source		***Budget 2004-05***	***2005-06***	***2006-07***	***2007-08***	***2008-09***	***2009-10***	***Un-Program***	***5-Year Total***
	R.S.	*$950,338*	*$244,426*	*$48,650*	*$826,000*	*$0*	*$0*	*$48,448*	*$1,119,076*

Total by Agency: Sewerage Department	***Budget 2004-05***	***2005-06***	***2006-07***	***2007-08***	***2008-09***	***2009-10***	***Un-Program***	***Grand Total***
	$950,338	*$244,426*	*$48,650*	*$826,000*	*$0*	*$0*	*$48,448*	*$2,117,862*

Project Status: M=project is maintaining current infrastructure; N=project will result in new development
Project Timeline: P=project is proposed; O=project is ongoing; U=project is one time and underway
Impact on Operating Budget: AF=additional funding is required; RF=results in reduction of funding; NOI=no operating impact
Impact on Staffing Budget: AS=additional staffing is required; RS=results in reduction of staffing; NSI=no staffing impact
Impact on Operating Budget $: annual additional funding or (reduction of funding) to operating budget

SEWAGE DISPOSAL SYSTEM HIGH PRIORITY PROJECTS (42)

The sewage disposal system capital improvement program schedules are presented in the Capital Agenda according to major program categories because individual projects would be too numerous to include separately. The most important projects for each program category are shown below.

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Primary Clarifiers 17 and 18 at WWTP	M	U	AF/NSI	PT	S/D	2005	1,600,000	5
Primary Clarifiers 17 and 18 at WWTP	M	U	AF/NSI	PT	C	2005	9,500,000	5
Replacement of Main Lift Pumps at Pump Station No. 1	M	U	NOI/NSI	PT	D	2005	326,000	5
Replacement of Main Lift Pumps at Pump Station No. 1	M	U	NOI/NSI	PT	C	2005	13,500,000	5
Replace Troughs & Weirs in Rectangular Primary Sedimentation Tanks 1 through 12	M	U	NOI/NSI	PT	DB	2005	1,045,000	5
Improvements to Rectangular Primary Clarifier Pipe Gallery	M	P	NOI/NSI	PT	S/D	2005	928,000	5
Improvements to Rectangular Primary Clarifier Pipe Gallery	M	P	NOI/NSI	PT	C	2006	5,165,000	5
Replace Primary Electrical Feed for Rectangular Tanks	M	P	NOI/NSI	PT	S/D	2005	60,000	5
Replace Primary Electrical Feed for Rectangular Tanks	M	P	NOI/NSI	PT	C	2005	2,400,000	5
Pump Station No. 2 Pumping Improvements	M	P	NOI/NSI	PT	D	2005	2,900,000	5
Pump Station No. 2 Pumping Improvements	M	P	NOI/NSI	PT	C	2008	16,000,000	5
New Troughs and Weirs for Primary Clarifiers	N	P	NOI/NSI	PT	S/D	2004	690,000	5
New Troughs and Weirs for Primary Clarifiers	N	P	NOI/NSI	PT	C	2007	6,000,000	5
Replacement of Impellers and Wear Rings for the Pump Station 1 & 2 at WWTP	M	P	NOI/NSI	PT	D/C	2005	4,507,000	5
						Primary Treatment - Subtotal	**$ 64,621,000**	

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Secondary Clarifier Improvements	M	U	NOI/NSI	ST	C	2005	9,870,000	5
Aeration Deck Conversion and Improvements	M	U	NOI/NSI	ST	D/C	2005	25,196,000	5
					Secondary Treatment - Subtotal		**$ 35,066,000**	
Incinerator Burner Train Improvement	M	U	NOI/NSI	SH	DB	2005	1,870,000	5
Rehabilitation of Complexes A & B	M	U	NOI/NSI	SH	D/C	2005	9,400,000	5
Central Off-Load Facility	N	U	NOI/NSI	SH	DB	2005	9,495,000	5
New Scum Concentration Facility & Related Improvements	N	U	NOI/NSI	SH	C	2005	154,000	5
New Scum Concentration Facility & Related Improvements	N	P	NOI/NSI	SH	C	2005	10,300,000	5
Rehabilitate Sludge Pump Stations 1 & 2	M	P	NOI/NSI	SH	D/C	2006	6,007,000	5
Rebuilding of Belt Filter Presses - Complex I	M	P	NOI/NSI	SH	D	2005	300,000	5
Rebuilding of Belt Filter Presses - Complex I	M	P	NOI/NSI	SH	C	2005	10,000,000	5
Complex I & II Incinerator Improvements	M	P	NOI/NSI	SH	S/D	2005	10,500,000	5
Complex I & II Incinerator Improvements	M	P	NOI/NSI	SH	C	2008	96,000,000	5
					Solids Handling - Subtotal		**$ 154,026,000**	
Detroit River Outfall Disinfection Facilities	N	U	AF/NSI	D	D	2005	3,320,000	5
					Disinfection - Subtotal		**$ 3,320,000**	

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Instrumentation, Control, & Computer System Program at WWTP	N	U	AF/NSI	GP	D/C	2005	51,337,000	5
Program Management for Wastewater Treatment Plant Rehabilitation & Upgrade	N	U	AF/NSI	GP	S/D	2005	20,400,000	5
As-needed Services for Concrete Testing, Geotechnical Soil Borings, Other Testing Services & Related Services	N	U	NOI/NSI	GP	D/C	2005	3,376,000	Various
Asbestos Abatement & Reduce/Remove Hazardous Materials	M	U	NOI/NSI	GP	D/C	2005	1,799,000	5
Facilities As-built Documentation Development & Maintenance Services	M	U	NOI/NSI	GP	D/C	2005	3,222,000	5
Renovation of Old Administration Building & Ragland Building at Operations Laboratory at WWTP	M	U	NOI/NSI	GP	D/C	2005	8,345,000	5
Power Enhancement - New Generator Systems	N	U	AF/NSI	GP	C	2005	2,500,000	5
Power Enhancement - Modifications to the Existing Generator Systems	M	U	NOI/NSI	GP	C	2005	2,500,000	5
Power Enhancement - Primary Service Conversion and PCB Disposal	N	U	NOI/NSI	GP	C	2005	3,800,000	5
Consultant Contract for Instrumentation & Control System Repair & Engineering Services at WWTP	N	U	NOI/NSI	GP	S/D/C	2005	4,800,000	5
Job Order Contracting: As-needed General Construction Services	N	U	NOI/NSI	GP	C	2006	3,050,000	5
Underground Electrical Duct Bank Repair - WWTP	M	P	NOI/NSI	GP	C	2005	4,400,000	5

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Upgrade Electrical Supply	M	P	AF/NSI	GP	S/D	2005	100,000	5
Upgrade Electrical Supply	M	P	AF/NSI	GP	C	2005	3,500,000	5
Improve Plant Security	M	P	AF/AS	GP	S/D	2005	100,000	5
Improve Plant Security	M	P	AF/AS	GP	C	2005	4,000,000	5
Roof & Pavement Asset Management Program & As-needed Engineering Services	M	P	NOI/NSI	GP	D	2005	2,500,000	5
Relocation of Wastewater Treatment Plant Analytical Lab	N	P	NOI/NSI	GP	C	2005	11,000,000	5
Plant-wide Fire Protection Improvements	M	P	NOI/NSI	GP	D/C	2005	2,409,000	5
Potable Water Backflow Prevention Improvements	M	P	NOI/NSI	GP	D/C	2005	1,587,000	5
Repair Damage at New Administration Building due to the Settlement of Floor Slab on the Grade	M	P	NOI/NSI	GP	S/D/C	2005	5,300,000	5
Asbestos Containing Material & Lead Based Paint Abatement for all DWSD Facilities	M	P	NOI/NSI	GP	C	2005	3,250,000	5
WWTP Work Environment Improvement	M	P	NOI/NSI	GP	S/D	2006	790,000	5
WWTP Work Environment Improvement	M	P	NOI/NSI	GP	C	2007	4,500,000	5
Department-wide Roof Replacement and Repair III	M	P	NOI/NSI	GP	D/C	2005	2,500,000	5
Plant-wide Fire Alarm Systems Upgrade and Integration	M	P	NOI/NSI	GP	S/D/C	2005	3,245,000	5
Replacement of CSO Basins Control Systems	N	P	NOI/NSI	GP	S/D/C	2006	2,258,000	5
Low Voltage Wiring Contract	M	P	NOI/NSI	GP	C	2005	3,000,000	5
Emergency Generators at the Wastewater Treatment Plant	N	P	AF/NSI	GP	DB	2005	16,100,000	5

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
					General Purpose - Subtotal		**$ 175,668,000**	
Primary Measuring Device Improvements - Group 3	N	U	NOI/NSI	SIS	C	2006	3,500,000	5
Clinton Township & City of Fraser Control Facilities: 15 Mile Rd & Hayes (NE & SE Corners), and 15 Mile Rd & Little Mack Avenue	N	P	AF/AS	SIS	C	2007	2,000,000	5
					Sewer Interceptor System - Subtota		**$ 5,500,000**	
Conner Creek & Fox Creek Stations Rehabilitation	M	U	NOI/NSI	CSS	C	2005	17,000,000	3
Long Term CSO Control Plan - Phase III	N	U	NOI/NSI	CSS	S/D	2005	12,100,000	Various
Conner Creek CSO Pilot Facility	N	U	AF/NSI	CSS	S/D	2005	2,075,000	3
Conner Creek CSO Pilot Facility	N	U	AF/NSI	CSS	C	2005	18,513,000	3
Baby Creek CSO Pilot Control Facility	N	U	AF/NSI	CSS	S/D	2005	568,000	
Baby Creek CSO Pilot Control Facility	N	U	AF/NSI	CSS	C	2005	60,000,000	
Installation of In-system Storage Devices	N	U	NOI/NSI	CSS	C	2005	4,386,000	Various
Overhaul of Major Electrical Power Distribution Equipment	M	U	NOI/NSI	CSS	C	2005	2,083,000	Various
Oakwood CSO Control Facility and Pump Station	N	U	NOI/NSI	CSS	S/D	2005	15,651,000	5
Bluehill Pumping Station Rehabilitation	M	U	NOI/NSI	CSS	D	2005	2,040,000	3
Bluehill Pumping Station Rehabilitation	M	U	NOI/NSI	CSS	C	2005	21,028,000	3
Inspection & In-place Rehabilitation of Existing Circular & Non-circular Sewer up to and larger than 15" in Diameter	M	U	NOI/NSI	CSS	C	2005	19,597,000	Various

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Additional Pump at Northeast Sewage Pumping Station	N	U	AF/NSI	CSS	S/D	2005	391,000	1
Additional Pump at Northeast Sewage Pumping Station	N	U	AF/NSI	CSS	C	2005	3,000,000	1
Security System Upgrade for Various Booster Pumping	M	U	AF/NSI	CSS	DB	2005	8,663,000	Various
Inspection & In-place Rehabilitation of Outfalls	M	U	NOI/NSI	CSS	DB	2005	15,483,000	Various
Fischer Pumping Station Rehabilitation	M	P	AF/NSI	CSS	S/D	2005	1,400,000	3
Fischer Pumping Station Rehabilitation	M	P	AF/NSI	CSS	C	2007	7,000,000	3
Woodmere Pumping Station Rehabilitation	M	U	AF/NSI	CSS	D	2005	2,100,000	5
Woodmere Pumping Station Rehabilitation	M	P	AF/NSI	CSS	C	2006	15,000,000	5
Upper Rouge River CSO Tunnel	N	P	AF/NSI	CSS	S/D	2005	110,000,000	Various
Upper Rouge River CSO Tunnel	N	P	AF/NSI	CSS	C	2008	620,000,000	Various
Outfall Improvements Allowance	M	O	NOI/NSI	CSS	D/C	2005	1,150,000	Various
Outfall Improvements Allowance	M	O	NOI/NSI	CSS	D/C	2006	4,150,000	Various
Outfall Improvements Allowance	M	O	NOI/NSI	CSS	D/C	2007	4,150,000	Various
Outfall Improvements Allowance	M	O	NOI/NSI	CSS	D/C	2008	3,000,000	Various
Consultant Services for Land Acquisition for Long Term CSO Control Program	N	U	NOI/NSI	CSS	S	2005	4,000,000	
Land Acquisition Allowance for Long Term CSO Control Program	N	U	NOI/NSI	CSS	C	2005	37,530,000	Various
Wet Weather Source Reduction Demonstration - LTCSO Plan	N	P	AF/NSI	CSS	S/D/C	2006	178,000,000	Various
CSO Control for Oakwood Pumping Station	N	P	AF/NSI	CSS	S/D	2008	88,000,000	5
Belle Isle Main Pumping Station & CSO Control Improvements	N	P	NOI/NSI	CSS	C	2005	12,500,000	3

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Clintondale Pumping Station Improvements	M	P	AF/NSI	CSS	D	2005	2,445,000	
Clintondale Pumping Station Improvements	M	P	AF/NSI	CSS	C	2007	15,000,000	
				Combined Sewer System - Subtotal			**$ 1,308,003,000**	
Palmer Woods Phase IV Improvements: Water System & Lateral Sewer Replacement	M	P	NOI/NSI	LSR	C	2005	8,000,000	10
Lateral Sewer Replacement Allowance	M	O	NOI/NSI	LSR	D/C	2005	9,110,000	Various
Lateral Sewer Replacement Allowance	M	O	NOI/NSI	LSR	D/C	2006	10,000,000	Various
Lateral Sewer Replacement Allowance	M	O	NOI/NSI	LSR	D/C	2007	10,000,000	Various
Lateral Sewer Replacement Allowance	M	O	NOI/NSI	LSR	D/C	2008	3,000,000	Various
Lateral Sewer Replacement - Oakwood District	M	U	NOI/NSI	LSR	S/D	2005	300,000	5
Lateral Sewer Replacement - Oakwood District	M	U	NOI/NSI	LSR	D/C	2006	10,000,000	Various
				Lateral Sewer Replacement - Subtotal			**$ 50,410,000**	
Information Systems Data System Improvement	N	P	NOI/NSI	PA	S/D/C	2005	2,000,000	
Information Systems Local Area Network Improvements	M	P	NOI/NSI	PA	S/D/C	2005	7,000,000	
PBX & Telecommunications Systems Improvement & Replacement	M	P	NOI/NSI	PA	S/D/C	2006	3,000,000	
Department-wide Enterprise Application Integration (EAI)	N	P	NOI/NSI	PA	S/D/C	2005	3,250,000	
Regional 800 MHz Trunked Radio System	N	U	AF/NSI	PA	D/C	2005	18,650,000	
Information Systems Evergreening	M	O	NOI/NSI	PA	C	2005	2,250,000	
Expanded GIS Services and Implementation	M	U	AF/AS	PA	D	2005	4,962,000	

High Priority Projects - Sewage Disposal System (42)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Department-wide Electronic Document Management System	N	U	NOI/NSI	PA	S/D/C	2006	4,500,000	
Secure Connection for Business & Process Control Networks and Related Systems Security Improvements	M	U	NOI/NSI	PA	S/D/C	2005	2,250,000	
Information Systems Wide Area Infrastructure Improvements	N	U	NOI/NSI	PA	S/D/C	2006	13,100,000	
Water Meter Replacement & Automatic Meter Reading Equipment Installation	N	U	NOI/NSI	PA	D/C	2006	97,500,000	Various
						Planning & Administration - Subtotal	**$ 158,462,000**	
						All Categories - Total	**$ 1,955,076,000**	

Legend

*Project Status: M = project is maintaining current infrastructure; N = project will result in new development

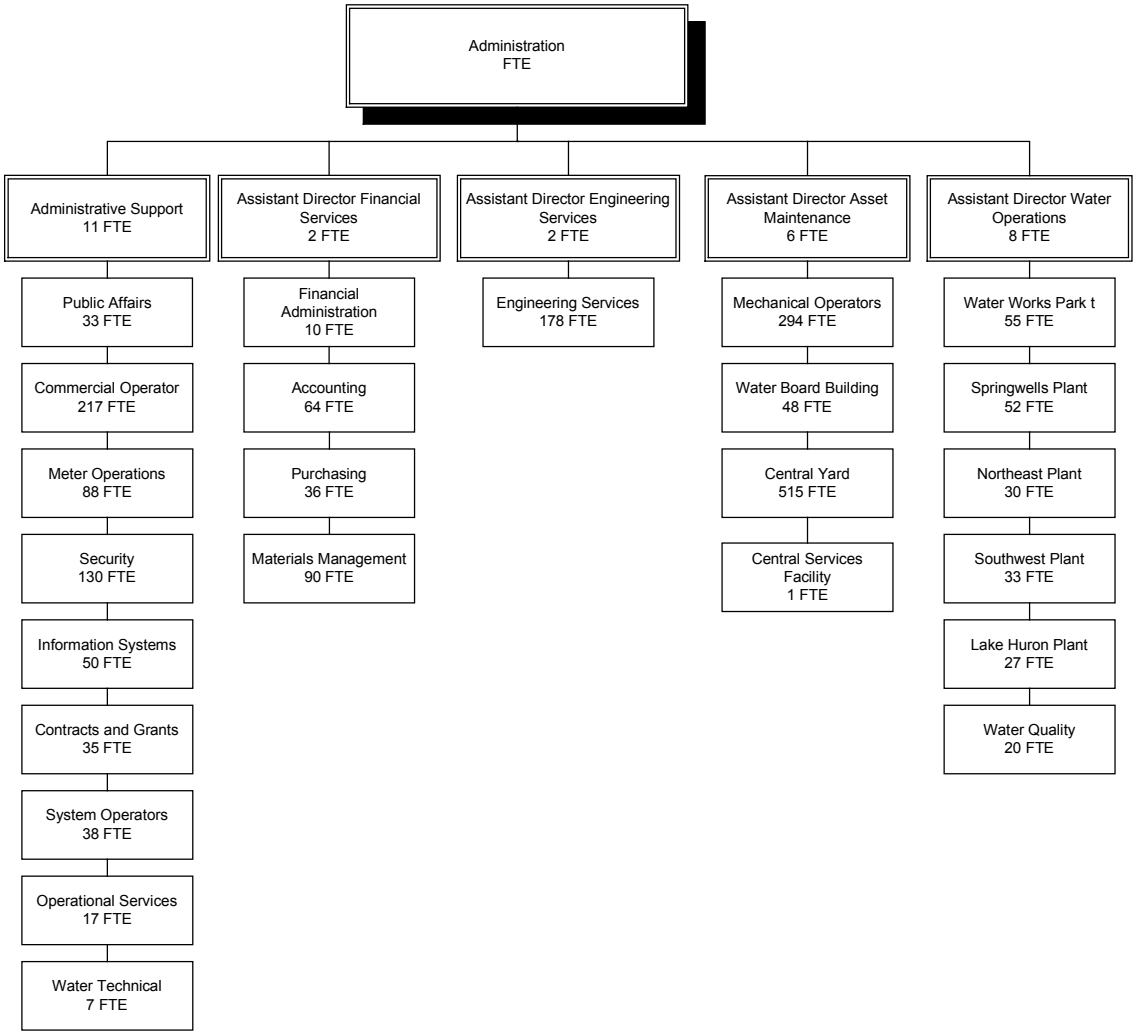
**Project Time Line: P = project is proposed; O = project is ongoing; U = project is one time only and is underway

***Impact on Operating Budget: AF = additional funding required; RF = results in reduction of funding; NO I= no operating impact

***Impact on Staffing Budget: AS = additional staffing required; RS = results in reduction of staffing; NSI = no staffing impact

****Project Phase: S = study; D = design; C = construction

WATER



kids cops clean

AGENCY MISSION

The mission of the Water and Sewerage Department will exceed our customers' expectations through the innovative treatment and transmission of water and wastewater that promote healthy communities and economic growth, and excel in the management of cost-efficient water sources for the people of Southeastern Michigan.

Water Supply System Goals

1. Implement the policies of the Board, Charter requirements and Federal mandates for supplying water and sewerage services.
2. Provide adequate level of trained personnel to operate the water and sewerage system.
3. To inform the public of agency operations, especially with regard to water operations.

CURRENT FACILITIES

Water Supply System

The Water Supply System is administratively part of the Detroit Water and Sewerage Department while maintained as a separate fund in the City of Detroit accounting system. The Department operates five water treatment plants and twenty-one booster (re-pumping) stations and twenty reservoirs. Of these five water plants, two plants are located in Detroit and one each is located in Allen Park, Dearborn and Port Huron. There are three sources of raw water supply – Detroit River at Fighting Island, Detroit River at Belle Isle and Lake Huron north of Port Huron. DWSD's five water treatment plants pump an average of 675 million gallons of clean drinking water each day.

The Water Supply System's primary role is to provide potable water for over 4 million residents in Southeastern Michigan, delivered at various points in the system at adequate pressure to meet our customers' needs. The water provided is in conformance to applicable standards as required by Michigan's Safe Drinking Water Act. The department furnishes sufficient water pressure and pipeline service to assure acceptable fire protection.

The Water system serves a total population of nearly 4 million people in Detroit and in 125 other communities within a 1,011 square mile service area in Southeastern Michigan. The main administrative offices are located at 735 Randolph in downtown Detroit. Approximately 3,400 miles of transmission and distribution mains within the City of Detroit, and 790 miles of transmission lines in the remaining service area are owned and maintained by the department.

FIVE YEAR HISTORY

Except as otherwise noted, revenues of the Water Supply System provided funding for these improvements.

Fiscal Year 2002-03

Franklin Pumping Station Reservoir Rehabilitation $1,483,798

This project involved the rehabilitation of the Franklin Pumping Station Reservoir in West Bloomfield. The work consisted of concrete repair to walls, base slab, and roof slab including chemical grout injection, sealing, and caulking, and installation of elastometric membrane. This work also involved the construction of reservoir overflows and site drainage, and the refurbishment of sluice gate.

Lead and Copper Corrosion Control and Imlay Station Improvements $10,737,290
This project involved Tucker, Young, Jackson, Tull, Inc. providing professional services in connection with corrosion control treatment and the design of treatment improvements at the Water Treatment Plants in order to comply with Federal Regulations involving the Lead and Copper Rule. The work involved the installation of five additional pumps, and miscellaneous improvements to HVAC, controls, and valves at the North Service Center. This project also involved the design and construction of the chemical feed systems to make DWSD's potable water supply less corrosive. This work further consisted of developing specifications for procurement and installation of corrosion control equipment, soliciting bids for the procurement and installation of the equipment, and acting as the City's agent by providing field service during the installation and testing of corrosion control equipment.

Lake Huron Pretreatment & Field Control Modifications $10,822,317
This project involved the rehabilitation of the pretreatment facilities at the Lake Huron Water Treatment Plant. The work consisted of replacing and installing rapid mix baffle walls to increase the hydraulic mixing of pretreatment chemicals, rehabilitating the existing flocculation equipment, and modifying the filter washwater piping and filter controls. This work also involved modifications to the chlorine feed; chlorine scrubber, sampling systems, and the alum feed piping.

Lake Huron Clearwells and Suction Wells Improvements $5,961,557
This project involved the rehabilitation to the North and South Clearwells and the Suction Well at the Lake Huron Water Treatment Plant. The work consisted of performing pressure injection grouting, sealing stress cracks, repairing construction joints, and installing sheet membrane waterproofing with edge drains over each of the north and south clear wells. The work further involved constructing two detention basins and submersible stormwater pump stations, site improvements, refurbishing rectangular butterfly valves, and improving clearwell instrumentation and miscellaneous metal covers over existing equipment openings.

Other work involved the rehabilitation of the waste washwater retention basins. This consisted of the construction of new reinforced concrete walls, walkways, handrails, edge drains, and miscellaneous electrical improvements.

Belle Isle Dike Rehabilitation $4,094,674
This project involved the rehabilitation of the Belle Isle Dike at the Water Works Park Water Treatment Plant. The work consisted of rebuilding approximately one-half mile of the riverside dike, which included underwater grouting; removing and replacing eroded blocks, concrete cap, and filling cavities. The work further involved repairing slopes, reshaping core, and new bedding core.

Southwest Plant Reservoir No. 2 Rehabilitation $1,694,457
This project involved the rehabilitation of the steel potable water tank at the Southwest Water Treatment Plant Reservoir No. 2**.** The work consisted of the removal and replacement of the corroded structural steel members, cleaning and painting the steel surfaces to the interior and exterior surfaces of the wall base, roof, inlet/outlet piping, and overflow piping including sand blasting. The work

also included the installation of baffle on the inlet piping, a new air vent cupola, and a cathodic protection system and associated electrical work. The work further involved the restoration of the delaminated concrete surfaces of valve pits A1 and A2, reservoir column footings, removal and replacement of the air release/vacuum relief valves in pits A1 and A2, and site drainage and grading.

Roof and Masonry Rehabilitation of the Newer Filter Building $3,014,620
This project involved the rehabilitation of the roof and exterior masonry walls of the Newer Filter Building at the Springwells Water Treatment Plant**.** The work consisted of the removal and reconstruction of the perimeter walls and roof of the Newer Filter Building. Work also included the replacement of existing doors with twenty new stainless steel doors and frames; the installation of a drainage pipe system; and concrete topping on the Mix Chamber Deck.

Water System Replacement – Various Streets Throughout the City $4,342,562
This project involved the replacement of water mains in various streets throughout the City. The work consisted of the replacement of existing six-inch, eight-inch, twelve-inch, and sixteen-inch water mains with approximately 10,149 linear feet of eight-inch, 3,845 lf of twelve-inch, and six linear feet of sixteen-inch City furnished ductile iron water main. This also included the furnishing and installation of approximately 14, 041 linear feet of eight-mil polyethylene wrap, including all appurtenances, connections, and related structures. The work further involved pavement resurfacing and surface restoration.

Lake Huron Water Treatment Plant – Filtration Capacity Improvements $7,636,284
This project involved filter control improvements to the Lake Huron Water Treatment Plant by adding ten additional filters to increase the plant's filter capacity to 400 MGD. The work consisted of filtration capacity improvements including installation of filter media, filtration controls, valves, and piping for ten of the existing empty filter boxes. The work also included improvements to the hydro-pneumatic water, compressed air, and sampling systems. The work further provided for the rehabilitation of the North Filtered Water Influent Channel and associated work at the Lake Huron Plant.

Design/Build/Maintain Contract for Emergency Generators $26,099,715
This project involved the purchase of 44 emergency generators (29 for water and 15 for sewage facilities) after Detroit Energy (DTE) announced that the provision of power could not be guaranteed with the coming of year 2000 (Y2K). The generators were procured to provide electrical power and maintain services to critical water and sewage operations after Y2K. The generators will be further utilized as backup for any emergencies as well as providing peak rate sharing with DTE to help reduce costs. Legal services were procured to ensure that DWSD would not be in violation of the U.S. Tax code or jeopardize their tax-exempt status by using the generators to ease power usage during DTE's peak times, which would benefit a non-government entity. The Sewage Disposal System and Water Supply System financed this project jointly.

Water System Improvements in Grand River – Jeffries Freeway to Southfield Freeway $4,498,270
This project involved the replacement or installation of water mains in Grand River from the Jeffries Freeway to the Southfield Freeway in the City of Detroit in conjunction with the Michigan Department of Transportation and the Detroit Water and Sewerage Department. The work consisted of replacing approximately 49 feet of six-inch, 13,107 feet of eight-inch, thirteen feet of ten-inch, and 138 feet of twelve-inch with 13,333 feet of ductile iron water main with eight-mil polyethylene wrap. This included all appurtenances, connections, and related structures.

Fiscal Year 2001-02

Ford Road Reservoir Rehabilitation $1,872,634
This project involved the rehabilitation of the Ford Road Booster Station in Dearborn Heights, which aided in optimizing the water transmission system. The work consisted of concrete repair work to the interior walls, base and roof slabs including concrete restoration, chemical grout injection, sealing, and caulking, and installation of elastomeric membrane, and Knife Gate Valve. The work further included the construction of reservoir overflows and site drainage, extension of an inlet header, installation of reservoir sampling piping system and sampling sink, and all appurtenances.

Computer Assisted Mapping – Detroit $2,672,252
This project involved the conversion of 830 DWSD section maps (of which 173 were water's) to computerized digital files, before further deterioration of the hard copies occurred. The work included creating and connecting the various components to a skeletal database to increase better efficiency within the department. This project entailed collecting and entering data (all field book index cards - approximately 32,000 segments of water pipe sizes, both city and suburban) into the database, and linking data to the corresponding segment of pipe. It further included setting up Modular Geographic Information Systems Environment (MGE) GeoData Manager database, and provide training to DWSD staff before and after delivery of the final product. The Water Supply System and the Sewage Disposal System jointly financed this project.

Emergency Procurement for Filtered Water Conduit Repair at the Northeast Water Treatment Plant $2,362,443
This project involved L. D'Agostini & Sons, Incorporated repairing the filtered water conduit at the Northeast Water Treatment Plant. The work consisted of repairing circumferential cracks at 30, 50, and 65 feet in the conduit to the roof, walls, and floor. The cracks were perpendicular to the conduit's longitudinal axis. The work further included repairing 45 feet of a diagonal crack in the north external wall.

Springwells Plant Rehabilitation $17,424,536
This project involved the rehabilitation of the Springwells Water Treatment Plant in updating the chlorination process and steam heating system in order to meet current building codes and environmental regulations. The work entailed the removal of two (2) steam boilers, their auxiliary facilities, and installing a new steam generating system. It also included removing the existing chlorine feed, storage, heating and ventilation equipment, and building a new two-story chlorine storage facility. This project also provided

provisions for erecting a temporary pre-engineered metal building to install and house temporary chlorine feed system in the Service Building while construction was under way for the new chlorine facility. This project further involved installing new chlorine feed and scrubber systems, heating and ventilation system, installing three (3) new hot water boilers, and new dehumidification systems for the High Lift Pump Station Pipe Gallery, the Filter Gallery and the Service Building.

Water System Improvements, Various Streets throughout the City $7,128,866
This project involved the replacement of existing water mains in various streets throughout the City of Detroit. The work consisted of replacing six-inch, eight-inch, twelve-inch, and sixteen-inch water mains with approximately 70 linear feet of six-inch, 6,740 linear feet of eight-inch, 797 linear feet of twelve-inch and 1,192 linear feet of sixteen-inch City furnished ductile iron pipe with polyethylene wrap. This included all appurtenances, connections, and related structures. This project further included the replacement of a sixteen-inch process main including, all appurtenances, and related structures at the Lake Huron Water Treatment Plant
Change orders numbers one and two included but were not limited to replacing or relocating existing water mains on Oakman Boulevard from Linwood Street to the City of Detroit – Highland Park City limits with approximately 4,423 linear feet of eight-inch, 2,837 linear feet twelve-inch, and 105 linear feet of sixteen-inch ductile iron pipe. The work further entailed replacing water mains in Beaubien and Brush Streets from East Jefferson to E. Congress and from E. Jefferson to E. Fort respectively in the City of Detroit. The work consisted of replacing approximately 1,116 linear feet of eight-inch, and 760 linear feet of sixteen-inch ductile iron mains including valves and appurtenances. Change orders three and four accommodated the City's urban renewal and economic development projects. This work provided for the replacement of water mains in the Palmer Woods and Santa Barbara areas.

42"Main in Fairchild Road from 24 Mile Road to 21 Mile Road $5,555,606
This project involved the construction of a 42-inch water main on Fairchild Road from 24 Mile Road to 21 Mile Road in Chesterfield Township. The work consisted of installing approximately 15,673 linear feet of 42-inch concrete embedded cylinder pipe with rubber and steel joints including appurtenances. This project provided a second source of water supply to Chesterfield, Macomb, Clinton, and Lenox Townships, and New Haven as a back-up emergency supply to DWSD's 36-inch water main in 24 Mile Road.

Change order number one involved installing a sixteen-inch bypass in a 36-inch water main, a 42-inch water main across I-94 ramps, and replacing pavement from 22 mile Road to 24 mile Road.

Fiscal Year 2000-01
Reservoir Rehabilitation North Service Center Reservoir #1 $1,286,962
This project involved the rehabilitation of North Service Center at the booster station in Troy. It provided for concrete restoration to walls, base and roof slabs, chemical grout injection, sealing and caulking, and installation of elastomeric membrane. The work also included construction of reservoir overflows and site drainage, extension of an inlet header, installation of reservoir

sampling piping system and sampling sink, and appurtenant work.

Change Orders included but were not limited to: additional quantities of sealant for roof cracks by 24,058 linear feet, restoration of concrete walls which included identification and removal of unsound concrete, preparation of concrete surfaces and reinforcing, forming and patching of deteriorated concrete, and curing, finishing and cleaning formed surfaces.

Rochester Booster Pumping Station $8,535,485
This project involved the design/build and operation of the new 57 million-gallon per day (MGD) Rochester Booster Pumping Station in Shelby Township. The project included the purchase of four pumping units, training DWSD's operations and maintenance personnel, preparing an operation and maintenance manual, and performing necessary activities to properly interconnect the new pumping station with DWSD's existing water transmission system. These activities involved controls for both remote and local operations, new controls at DWSD's System Control Center and telemetry systems for remote operations.

Construction Management Services for Overhaul of Major Pumping Equipment $4,025,230
Best American Industrial Services oversaw the repair of major pumping equipment at the Department's five Water Treatment Plants, twenty unmanned water booster stations, and fourteen unmanned Sewerage pumping stations. The work consisted of the removal, overhaul, installation and testing of pumps, valves and motors. Best American also provided construction management services which consisted of ensuring that major pumping equipment continued to operate at maximum efficiency, assisted in the preparation of request for proposal packages for the various phases of repair work, solicited specialized service contractors's proposals, received competitive bids, analysed bids and made recommendations. The contractor also secured the labor force to install equipment on an as needed bases, maintained cost and accounting controls, identified variances between actual and budget cost, and performed other associated tasks and related duties.

Change order no. 1 included, but was not limited to, the removal, repair, installation and testing of varous pumping equipment and related skilled trades assistance.

Springwells/ Southwest Flocculator Replacement $18,492,978
This project involved the refurbishment and /or replacement of twenty flocculators in both the Springwells and Southwest Water Treatment Plants to proved an additional process barrier for removing particles from the raw water prior to filtration. The work was spread over two low flow seasons in both plants in order to maintaining the operating capacity of each plant.

Water System Improvements in Grand River from Grand Blvd. To American $5,028,659
This project involved the replacement of existing water mains from Grand Blvd. to American in the City of Detroit. The work involved the replacement of six-inch, eight-inch, twelve-inch and sixteen-inch water mains with 8,942 linear feet of eight-inch, 294 linear feet of twelve-inch and 10,805 linear feet of sixteen-inch City furnished ductile iron pipe including polyethylene wrap, all appurtenances, connections and related structures. Change Order number one

involved the repair of gate valves on Grand River at W. Grand Boulevard and the realignment of the water main.

Water System Improvements in Grand River from American to Bryden & in Telegraph from Grand River to McNichols Road $4,043,520
This project involved the replacement of existing water mains in Grand River from American to Bryden Street, and in Telegraph from Grand River to McNichols in the City of Detroit. The work involved the replacement of six-inch, eight-inch, twelve-inch and sixteen-inch water mains with 12,225 linear feet of eight-inch, 468 linear feet of twelve-inch and 11,365 linear feet of sixteen-inch City furnished ductile iron pipe including polyethylene wrap, all appurtenances, connections and related structures.

Fiscal Year 1999-00
Master Meter Replacement/Automatic Meter Reading $1,788,000
This project involved DWSD Facilities Design Group designing the final phase of a rehabilitation and improvements program of the suburban water meter pits. The design included digital Automatic Meter Reading (AMR) and instrumentation equipment with radio based supervisory control and data acquisition (SCADA) equipment at 275 sites. It also included two head-end systems with computers to collect data.

Adams Station Improvements $799,000
This project involved Ghafari Associates, Inc. providing technical engineering services for the study and design phases and assistance during the construction phase of a ten million gallon reservoir, reservoir pumping units and other needed improvements at the Adams Road Station in Bloomfield Township. This project also provided preparation of contract documents for the construction phase of Adam Road Station based on recommended improvements from the study report.

Amendment No. 1 provided for additional technical and engineering services requested by DWSD in developing a comprehensive program for the plan, design, and construction phases of Adams Road Station Improvements. This amendment further involved the design of an additional fill and suction line to the yard piping for a future ten million-gallon reservoir at the site. Ghafari Associates, Inc. investigated variable frequency drive alternatives for the proposed reservoir pumps and hydro energy recovery alternatives. The consultant also submitted design review applications and fees on behalf of DWSD to local government agencies; and, performed subsoil exploration and related geo-technical engineering services.

Water Works Park Crib House Rehabilitation $1,291,000
This project involved the rehabilitation of Water Works Park Crib House, surge basins, and emergency intake. The work included selective demolition and replacement of windows, entrance doors, and frames, downspout retainers, hatch and frames, portions of concrete walk, thorough cleaning and painting of interior wood and metal surfaces, and removal and replacement of lifting hoists. The work also consisted of the removal of accumulated silt and debris from the Crib House by hydraulic dredging and disposal to an upland site and grouting open mortar joints in the ten-foot diameter tunnel and shaft. It also provided for the removal and disposal of wood debris at the intake site. The work further involved the removal and repair of the interior concrete in the underwater areas of the crib house,

disposal and replacement of the removal concrete covers and the bends of two shore shaft surge basins.

Change orders included but were not limited to: tuckpointing of an additional 396 feet of missing mortar at joints of the stone parapet wall, additional removal of wood debris, and application of sealant to Crib House exterior. Also, lead-bearing paint was contained and disposed of according to the legal requirements.

72" Main – Quarton Road from Brookdale Park Road to Lahser to Lincoln Road $8,219,000

This project involved the furnishing, installing, chlorinating, flushing and testing of approximately 17,731 linear feet of 72-inch diameter prestressed concrete embedded steel cylinder pipe with rubber and steel joints, including all appurtenances, connections and related structures. This work was performed along Big Beaver Road, Quarton Road, and Lahser Road from Woodward Avenue to Berkshire Drive in Bloomfield Township, City of Bloomfield Hills, and the City of Birmingham. This work also provided for tunnel crossings where the water main passes under Woodward Avenue and the Rouge River. Approximately 1,950 feet of 8-inch sanitary sewer lines were relocated in the City of Birmingham along Quarton Road from Lakeside Road to Chesterfield Road.

Water Main Replacement – Western District $1,817,000

This project involved the replacement of existing water mains in various streets throughout the Western District in the City of Detroit. The work consisted of replacing 4-inch, 6-inch, 8-inch, 12-inch, and 16-inch water mains with approximately 17,278 linear feet of 8-inch, 85 linear feet of 12-inch, and 46 linear feet of 16-inch ductile iron water main with an 8-mil polyethylene wrap. The work also included the connection of existing service connections and fire hydrants, gate valves and the connection of the new mains to existing mains in service. The work further included the installation of gate valves, gate boxes, construction of new gate wells, replacement of hydrants and all appurtenances, chlorinating and flushing new water mains, and related miscellaneous work.

Water Main Replacement – Various Streets – Northern and Central Districts $1,537,000

This project involved the replacement of existing water mains in the Northern and Central districts in the City of Detroit. The work consisted of replacing 6-inch, 8-inch, and 16-inch water mains with approximately 15,862 linear feet of 8-inch and 12-linear feet of 16-inch ductile iron water main with an 8-mil polyethylene wrap. The work also included the connection of existing service connections and fire hydrants, gate valves and the connection of the new mains to existing mains in service. The work further included the installation of gate valves, gate boxes, construction of new gate wells, replacement of hydrants and all appurtenances, chlorinating and flushing new water mains, and related miscellaneous work.

Water Main Replacement – Various Streets – Eastern District $1,764,000

This project involved the replacement of existing water mains in various streets throughout the Eastern district of the city of Detroit. The work consisted of replacing 4-inch, 6-inch, 8-inch, and 12-inch water mains with approximately 13,980 linear feet of 8-inch, 779 linear feet of 12-inch ductile iron water main with an 8-mil polyethylene wrap. It also involved the furnishing and installing of approximately 63 linear feet of

16-inch steel casing pipe in place of 8-inch ductile iron water main under the Consolidated Railroad tracks by the jacking and boring method. The work included the connection of existing service connections and fire hydrants, gate valves and the connection of the new mains to existing mains in service. The work further included the installation of gate valves, gate boxes, the construction of new gate wells, the replacement of hydrants and all appurtenances, the chlorinating and flushing of new water mains, and related miscellaneous work.

Water Main Replacement – Western District $1,596,000
This project involved the replacement of existing water mains in various streets throughout the Western District in the city of Detroit. The work consisted of the replacing 6-inch, 8-inch, and 16-inch water mains with approximately 15,197 linear feet of 8-inch and 14-linear feet of 16-inch ductile water main. The work also included the installation of 8-inch and 16-inch gate valve, 8-mil polyethylene wrap and construction of all appurtenances, connections and related structures.

Adams Road Station Improvements $10,429,000
This project involved constructing a ten million gallon pre-stressed concrete reservoir, completing related yard piping, site work, pump installation, and related piping at the Adams Road Station in Bloomfield Township. The work also provided for valves, the removal and replacement of an existing variable speed drive system on Line Pump L1, construction of an electrical service building and miscellaneous electrical improvements.

Removal, Remediation, and Installation of Underground Storage Tanks $155,000
This project involved the removal of eight underground storage tanks at Lake Huron Plant, Water Works Park, Springwells, Ford Road Station, Wastewater Treatment Plant, and Southwest Water Plant, with associated site clean-up and required disposal of contaminated soil and preparation of necessary regulatory reports. The work further involved the installation of nine new underground storage tanks with associated appurtenant systems, piping, leak detection, fuel dispensing and control systems. This project was initiated and completed to comply with federal underground storage tank regulations and the State of Michigan Underground Storage Tank Regulatory Act (PA423).

Change orders one and two involved the removal and disposal of 1440 cubic yards of contaminated soil, contaminated water removal and disposal, and asphalt and concrete paving at the sites. It also provided for additional professional environmental services as mandated by the Michigan Department of Natural Resources.

Suburban Master Meter Replacement #3 & Meter Pit Rehabilitation & Upgrading #2 $11,142,000
This project involved the replacement of 59 master meters and the rehabilitation of 121 existing water meter pits at a total of 156 suburban locations. Work consisted of the reconfiguration of meter installation piping, meter size change and associated lead joint work, replacement of non-functioning valves, and the installation of automatic butterfly control valves. Further rehabilitation consisted of replacement of sump pumps and vent fans, leak repairs, waterproofing, and changing the size and

location of disconnect switches on control cabinets. Additional work completed at meter replacement sites only consisted of the modification and construction of equipment access to manholes and construction of pipe supports.

Water System Improvements, Various Streets Throughout the City $1,680,000
This project involved the replacement or abandonment of existing water mains in various streets throughout the City of the Detroit. The work consisted of replacing 6-inch, 8-inch, and 12-inch water main with 13,871 linear feet of 8-inch and 288 linear feet of 12- inch City furnish ductile iron water main. It provided for the furnishing and installing of approximately 137 feet of 16-inch diameter steel casing pipe for 8-inch ductile iron main under the Consolidated Railroad tracks, with 8-mil polyethylene wrap; including all appurtenances, connections and related structures. The work also included the replacement of fire hydrants and all appurtenances, chlorinating and flushing new water mains, and related miscellaneous work. The work further included the connection of new mains, the installation of gate valves, gate boxes, and the construction of new gate wells.

Fiscal Year 1998-99
42 - 60-Inch Water Main in Easements Along Wayne/Washtenaw County Line $8,499,000
This project provided a water main supply line to Canton, Plymouth, Superior, Van Buren and Ypsilanti Townships. It involved the furnishing, installing, chlorinating, flushing, and testing of approximately 11,637 linear feet of 60-inch, 13,822 linear feet of 42-inch, thirteen linear feet of 36-inch and eighty-seven linear feet of 24-inch diameter prestressed concrete embedded cylinder pipe with rubber and steel joints (SP-12). This also included the appurtenances, connections and related structures. Change orders included but were not limited to: cost for furnishing twenty-four linear feet of 102-inch concrete pipe, extend 60-inch sleeve five feet, excavate and sink a shaft at the bend at Station 244+72.8, install steel sheeting along the 42-inch encasement and well point system for additional dewatering. It also included the removal and replacement of 48-inch storm piping at Station 65+60 and 1½" MBT cable encountered at Station 0+40, and cost for labor and materials to extend the entrance manhole structure at Station 243+20 by nine feet more than originally planned at Station 247+71.3.

72-Inch Main - Lahser from Lincoln Road to 14 Mile Road to E. of Inkster Road $15,517,000
This project involved work performed on the Fourteen Mile/Lahser Roads 72-inch water main from Inkster Road to Berkshire Drive. The work consisted of the construction of approximately 18,185 linear feet of 72-inch diameter prestressed concrete embedded cylinder pipe with rubber and steel joints (SP-12) including all appurtenances, connection and related structures.

Change orders included but were not limited to lowering the 72-inch water main by an average depth of 3.33 feet, cost for additional saw cutting, removal of concrete & asphalt pavement, and cutting and splicing ½-inch of steel piling sheets. It included the extension of contracts between M & M and Arborist, Owen Tree Service, Inc., modifying twenty feet of tunnel on Fourteen Mile Rd. west of Lahser Road to a lower invert and lowering the 72-inch water main by an average depth of 2.7 ft. The work also consisted of installing nine additional dewatering wells, extra

excavation, mud-jacking pavement on Telegraph Road, and additional pipe closures.

72-Inch Main Adams Station /Adams Rd. to Quarton Rd. to Brookdale Park Rd. $11,691,000
This project connected the Adams and Franklin Pump Stations, and also brought Port Huron Plant water to Franklin Station. This project involved furnishing, installing, chlorinating, flushing and testing approximately 20,746 linear feet of 72-inch and seventy-five linear feet of 36-inch diameter prestressed concrete embedded steel cylinder pipe with rubber and steel joints. It included all appurtenances, connections and related structures, and installation of Owner-furnished equipment. Change orders included but were not limited to installation of sheet piling, CMP liners and, 72-inch water main under the Grand Trunk Railroad' s (GTWRR) bridge on Big Beaver.

Southwest Water Treatment Plant Reservoir No. 3 Rehabilitation $1,705,000
This project involved rehabilitation of Southwest Water Treatment Plant, Reservoir No. 3. The work included replacement of corroded structural members and appurtenances, sand blasting, priming and painting interior and exterior of reservoir, service road paving around the tank and installing a Cathodic system. Change orders included but were not limited to: removal and replacement of three hundred forty-five rafters and grinders at various radii, different sizes and in varying length, furnishing and installing a 25 KVA, 480 Volt Primary and 240-120 Secondary Volt. It also provided for a transformer suitable for outdoor use, removal and disposal of 1,068 feet of rim angle around the perimeter of the tank and reinforcing the connection between the tank wall and the baffle wall.

Rehabilitation of Auxiliary Low Lift Pumps and High Lift Transmission Piping $10,563,000
This project involved the construction management of rehabilitation of an auxiliary Low Lift pump station and a High Lift transmission piping at Water Works Park. The work consisted of modifications to alum and carbon feed Structures, Auxiliary Low Lift Venturi Meters, Coagulation Basin, Auxiliary Low Lift Pump Station, and selected necessary architectural / structural / electrical improvements. The work also included removal of an existing High Lift Transmission Piping and installation of new High Lift Transmission Piping, new Gate Valves and Chambers, and new Venturi Tubes and Chambers. It further included removing Cone Valves from pressure reducing chambers and installation of new Cone Valves, installation of Cone Valve Control System, and modifications and additions to differential transmitting stations.

Computer Assisted Mapping – Suburban-Phase I $2,526,000
This project involved a time extension for contract CS-1213. The contract provided for the conversion of select Suburban Water and Sewer section maps into digital computer graphics systems showing DWSD facilities only. It also provided for the connection of features to a complete database; the scanning and indexing of the master meter drawings, and gate book sheets; pressure reducing valve; and, wastewater control facility drawings. This contract provided additional time for DWSD to purchase and install the Geographic Information System hardware and software, and provided training for DWSD personnel in different facets of the

project. This project was financed jointly by the Water Supply System and the Sewage Disposal System.

Eastside Customer Service Center
$325,000
This project involved the purchase of land and the building located at 13297-13301 E. McNichols for an Eastside Customer Service Center. The work consisted of rehabilitating, and replacing the HVAC units and emergency repair of the center. The building contains 12,000 square feet and has parking to accommodate approximately fifty vehicles. In addition to providing customer service for water and sewerage customers, MichCon leases space from DWSD thereby allowing the facility to retain the "energy concept" of utilities working and sharing office space. This project was financed jointly by the Water Supply System and the Sewage Disposal Systems.

PROPOSED FIVE YEAR CAPITAL PLAN

The capital improvement program for the Water Supply System (WSS) over the next five years is devoted to rehabilitating and improving existing water treatment plants, pumping stations, system instrumentation, and master meter pits; replacing deteriorated water distribution mains in the City of Detroit; installing new mains or rerouting existing mains to accommodate new development in the Empowerment Zone and throughout the City of Detroit; automating the meter reading function; upgrading the instrumentation and process control equipment of the water transmission system; constructing additional transmission mains and pumping facilities in order to loop the transmission system and bring in more water to the service area from the Lake Huron Plant.

The WSS capital improvement program includes a number of projects to rehabilitate and improve aging facilities. The complete replacement of Water Works Park is a major project in the WSS capital program. Virtually every structure and piece of equipment is scheduled to be replaced or rehabilitated. Plans for Springwells Plant include pre-treatment improvements, rehabilitation of filter beds, the low voltage electrical system, chlorine system, high lift pumping system, boilers, masonry and stone structures, and building roofs. The Water Supply System is engaged in an ongoing program to replace distribution mains in the City of Detroit, which have a high maintenance history. Rehabilitation programs for pumping station reservoirs and system instrumentation are also planned. Another major project is the construction of a 70 MGD Haggerty Booster Pumping Station with one 10 MG reservoir including six pumping units. All the water treatment plants have major sludge treatment projects to include continuous sludge removal from the settling basins and filter waste backwash water treatment with coagulation, flocculation, sedimentation and thickening, removal of alum sludge.

The WSS capital improvement program includes a number of projects intended to provide a more reliable and increased water supply to the service area. Construction of a new 42-inch transmission main in the Chesterfield Township loop will provide more water to Macomb County customers and will have the capacity to provide water to additional communities in that area.

The WSS capital improvement program includes a number of projects to take advantage of technology advances in the industry. A project currently underway is the water transmission system instrumentation,

process control and computerization program. Also planned is the installation and implementation of automatic meter reading systems for the suburban master meters, commercial meters, and residential meters.

d. Continuing to computerize various departmental functions to reduce costs and improve operations.

2. To obtain business growth and expansion by:

a. Constructing those additional mains, booster stations and reservoirs required to ensure an adequate water supply to all existing and new customers.

CAPITAL RELATIONSHIPS: INTERDEPARTMENTAL AND KEY STAKEHOLDERS

Detroit Water and Sewerage Department has no current or proposed capital projects requiring input from other City Agencies at this time.

GOALS FOR CAPITAL PROGRAM

1. To provide essential, efficient and user-friendly services by:

a. Maintaining, improving, and/or replacing water plants, transmission and distribution mains and other facilities to ensure a safe and adequate water supply.

b. Continuing the water main replacement program aimed at reducing the number of main breaks and leaks in the City of Detroit, thereby improving service, increasing public safety, and lowering costs to Detroit customers.

c. Automating the meter reading process and rehabilitating the suburban wholesale meters and meter pits to more accurately measure and bill for water service provided.

RATIONALE FOR CAPITAL PROGRAM

By City Charter, the Detroit Water and Sewerage Department is charged with the responsibility of supplying water, sewage disposal and drainage services within and outside of the City of Detroit. The Department's water treatment, transmission, and distribution facilities and its sewage collection and treatment facilities must be constructed, improved, maintained and replaced in a manner consistent with proper water and sewerage works practices and must meet standards mandated by the Michigan Department of Environmental Quality, Michigan Department of Public Health, and the Environmental Protection Agency. Moreover, the Department must remain capable of meeting its contractual commitments to its customers.

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM

METRO AREA CONSTRUCTION
The study, design and construction of new water transmission mains and major modifications to the existing water transmission system will ensure continued system integrity, improve system operations and provide additional contracted capacity.

2004-05	$ 24,510,000	Balances, Cash and/or Revenue Bonds
2005-06	10,000,000	Balances, Cash and/or Revenue Bonds
2006-07	-	
2007-08	42,000,000	Balances, Cash and/or Revenue Bonds
2008-09	-	
Unprogrammed	166,500,000	Balances, Cash and/or Revenue Bonds

URBAN SYSTEM IMPROVEMENTS
The study, design and construction of existing water main replacements includes all appurtenance, connections and related structures at various locations throughout the city.

2004-05	$73,479,000	Balances, Cash and/or Revenue Bonds
2005-06	18,314,000	Balances, Cash and/or Revenue Bonds
2006-07	32,632,000	Balances, Cash and/or Revenue Bonds
2007-08	34,800,000	Balances, Cash and/or Revenue Bonds

MAINTENANCE AND REPAIR
This work consists of the study, design and construction of modifications to the department's maintenance and repair yards and service centers.

2004-05	$1,000,000	Balances, Cash and/or Revenue Bonds

MECHANICAL MAINTENANCE
Projects include the purchase of major pieces of metering equipment, the study, design and construction of modifications to the existing water metering facilities, and the development of an automatic metering system. This category also includes projects for the rebuilding or replacement of major pieces of mechanical equipment, and improvements to the Water Board Building.

2004-05	$108,005,000	Balances, Cash and/or Revenue Bonds
2005-06	270,000	Balances, Cash and/or Revenue Bonds
2006-07	-	
2007-08	-	
2008-09	-	
Unprogrammed	21,250,0000	Balances, Cash and/or Revenue Bonds

WATER SUPPLY SYSTEM CAPITAL IMPROVEMENT PROGRAM (41)

COMPUTER SYSTEMS

Department efficiency and effectiveness will be enhanced by new computerized instrumentation and control systems for the Water Transmission System. Also included in the program are a computerized maintenance work order system, technical assistance for an information system/management information system, computer and local area network installation, and telephone and telecommunications improvements and an 821 MHz Trunking System.

2004-05	$101,157,000	Balances, Cash and/or Revenue Bonds
2005-06	3,000,000	Balances, Cash and/or Revenue Bonds

PLANT REPLACEMENT AND RENOVATION - GENERAL PLANT

Projects include water system instrumentation rehabilitation which involves renovation of pumps, valves, motors and electrical power distribution equipment for the water plants and pumping stations. Also included is installation of flow measurement devices at all Water Treatment Plants and Booster Pumping Stations, security systems for the Water Treatment Plants, emergency roof repair and maintenance, and an alum sludge removal and disposal study.

2004-05	$104,844,000	Balances, Cash and/or Revenue Bonds
2005-06	4,250,000	Balances, Cash and/or Revenue Bonds
2006-07	14,500,000	Balances, Cash and/or Revenue Bonds

WATER WORKS PARK PLANT

Planned work includes completing the construction of a new Water Works Park II Water Treatment Plant. Also included is the rehabilitation of the Raw Water Booster Station and building a roof and crane above the existing roof at WWP.

2004-05	$25,079,000	Balances, Cash and/or Revenue Bonds
2005-06	2,000,000	Balances, Cash and/or Revenue Bonds

SPRINGWELLS WATER PLANT

Projects include rehabilitation or replacement of 68 filters, improving the chemical feed system, replacement of filter backwash pumps and motors, refurbishing air compressors, providing new filter media, underdrains, valves and rate controllers, replacement of pumps, motors, and valves in the Low Lift and High Lift Pumping Stations, the installation of Variable Frequency Drives for several pumps in both pumping stations, installation of a local instrumentation and controls system to operate equipment at both stations, construction of isolation valve chambers for seven high lift discharge lines and upgrading the vacuum priming system.

2004-05	$16,489,000	Balances, Cash and/or Revenue Bonds
2005-06	73,365,000	Balances, Cash and/or Revenue Bonds
2006-07	277,460,000	Balances, Cash and/or Revenue Bonds
Unprogrammed	7,245,000	Balances, Cash and/or Revenue Bonds

NORTHEAST WATER PLANT

Projects include the complete rehabilitation of the Flocculation/Sedimentation basins, rehabilitation of the chemical storage and feed systems, upgrading of the Low Lift and High Lift Pump Stations, improvements to the electrical and mechanical deficiencies in the Switchgear, Wash Water, Chemical, Administration and Flocculation buildings. Works also consists of installation of continuous sludge collection equipment and construction of a treatment and disposal facility for sludge. Also included is the construction of filter media replacement and related filter rehabilitations, a comprehensive refurbishment of the Low Lift and High Lift Pump Stations and the replacement of the filter isolation and flow control valves and actuators, and a dehumidification system throughout the filter pipe gallery.

2004-05	$31,708,000	Balances, Cash and/or Revenue Bonds
2005-06	18,729,000	Balances, Cash and/or Revenue Bonds
2006-07	97,522,000	Balances, Cash and/or Revenue Bonds
2007-08	24,264,000	Balances, Cash and/or Revenue Bonds

SOUTHWEST PLANT

Projects include continuous sludge removal from the settling basins and filter waste backwash water treatment and removal of alum sludge to treatment facilities, rehabilitation of the Intake structure, installation of new low lift pump, installation of new ventilation system in the Flocculator Building, installation of Variable Frequency Drives to the filtration system, installation of electrical and instrumentation control system, and improvements to the chemical building and chemical system.

2004-05	$41,521,000	Balances, Cash and/or Revenue Bonds
2006-07	41,745,000	Balances, Cash and/or Revenue Bonds
2007-08	14,835,000	Balances, Cash and/or Revenue Bonds

LAKE HURON WATER PLANT

Projects include the construction of new treatment facilities for the disposal of waste washwater and rehabilitation of an underground clearwell.

2004-05	$25,062,000	Balances, Cash and/or Revenue Bonds

PUMPING STATIONS AND RESERVOIRS

Projects include rehabilitation of sixteen reservoirs and eight booster pumping stations, replacement of equipment at W. Chicago, Electric, Farmington, Michigan and Roseville booster stations, electrical improvements at the Schoolcraft and Wick Pumping Stations. Also included is the design and construction of a new water reservoir and pumping station in Chesterfield.

2004-05	$77,205,000	Balances, Cash and/or Revenue Bonds
2005-06	10,895,000	Balances, Cash and/or Revenue Bonds
2006-07	2,000,000	Balances, Cash and/or Revenue Bonds
2008-09	27,800,000	Balances, Cash and/or Revenue Bonds

WATER SUPPLY SYSTEM - PROPOSED FIVE YEAR CAPITAL PLAN

Summary of Water Supply System Highest Priority Projects

Project Category	Projected Cost
Metro Area Construction (MAC): projects involving the construction or replacement of water mains, pump stations and reservoirs outside of the City of Detroit	$ 70,976,000
Urban System Improvements (USI): projects involving the construction or replacement of water mains inside of the City of Detroit	155,747,000
Mechanical Maintenance (MM): projects relating to the purchase of major metering equipment, development/construction/rehabilitation of water metering facilities, and rebuilding of major pumps, motors, and valves	97,500,000
Computer Systems (CS): projects involving computerized instrumentation and control systems	89,444,002
Plant Renovation and Replacement: rehabilitation and improvement projects related to the following:	
General Plant (GP) - projects common to all or a number of water plants and/or pumping stations	92,472,000
Water Works Park (WWP) – rehabilitation and/or renovation work atWater Works Park Plant	5,000,000
Springwells Plant (SP) – rehabilitation and/or renovation work at Springwells Water Plant	366,471,000
Northeast Plant (NE) – rehabilitation and/or renovation work at Northeast Plant	166,456,000
Southwest Plant (SW) – rehabilitation and/or renovation work at Southwest Plant	58,580,000
Lake Huron (LH) – rehabilitation and/or renovation work at Lake Huron Water Plant	20,163,000
Pumping Stations and Reservoirs (PSR) – rehabilitation and/or renovation work at various reservoirs pumping stations	105,021,000
Water Supply System Highest Priority Projects – Total	**$1,227,830,002**

Water Department

	Project Status	Timeline	Impact on Budget	Impact on Staffing	Impact on Budget	Funding Source	Auth Un-issued	Budget 2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Un-Program	Rec. 5-Year Plan Total
Metro Area Construction						R.S.		$24,510	$10,000		$42,000			$166,500	$52,000
Urban Systems Improvements (UIS)						R.S.		$73,479	$18,314	$32,632	$34,800				$85,746
Maintenance and Repair						R.S.		$1,000							$0
Mechanical Maintenance (MM)						R.S.		$108,500	$270					$21,250	$270
Computer Systems (CS)						R.S.		$101,157	$3,000						$3,000
Plant Replacement and Renovation - General Plant (GP)						R.S.		$104,844	$4,250	$14,500					$18,750
Water Works Park Plant (WWP)						R.S.		$25,079	$2,000						$2,000
Springwells Water Plant (SP)						R.S.		$16,489	$73,365	$277,560				$7,245	$350,925
Northeast Water Plant (NE)						R.S.		$31,708	$18,729	$97,522	$24,264				$140,515
Southwest Plant (SW)						R.S.		$41,521		$41,745	$14,835				$56,580
Lake Huron Water Plant (LH)						R.S.		$25,062							$0
Pumping Stations and Reservations (PSR)						R.S.		$77,205	$10,895	$2,000		$27,800			$40,695

Total by Funding Source		Budget 2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Un-Program	5-Year Total
	R.S.	*$630,554*	*$140,823*	*$465,959*	*$115,899*	*$27,800*	*$0*	*$194,995*	*$750,481*

Total by Agency: Water Department	Budget 2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Un-Program	Grand Total
	$630,554	*$140,823*	*$465,959*	*$115,899*	*$27,800*	*$0*	*$194,995*	*$1,576,030*

Project Status: M=project is maintaining current infrastructure; N=project will result in new development
Project Timeline: P=project is proposed; O=project is ongoing; U=project is one time and underway
Impact on Operating Budget: AF=additional funding is required; RF=results in reduction of funding; NOI=no operating impact
Impact on Staffing Budget: AS=additional staffing is required; RS=results in reduction of staffing; NSI=no staffing impact
Impact on Operating Budget $: annual additional funding or (reduction of funding) to operating budget

WATER SUPPLY SYSTEM High Priority Projects (41)

The water supply system capital improvement schedules are presented in the Capital Agenda according to major program categories because individual projects would be numerous to include separately. The most important projects for each program category are shown below.

High Priority Projects - Water Supply System (41)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Automatic Vacuum and Air Release Valve Pit Modifications	N	O	NOI/NSI	MAC	S/D	2005	$ 1,400,000	
Automatic Vacuum and Air Release Valve Pit Modifications	N	P	AF/NSI	MAC	C	2006	10,000,000	
96" Main Relocation - 24 Mile Road and Dequindre	N	O	NOI/NSI	MAC	C	2005	17,576,000	
Wixom - South Lyon Pipeline	M	U	AF/NSI	MAC	C	2008	42,000,000	
				Metro Area Construction - Subtotal			**$ 70,976,000**	
Water Main Replacements & Improvements Throughout the City	M	O	NOI/NSI	USI	C	2005	$ 53,792,000	Various
Comprehensive Water Audit	M	O	NOI/NSI	USI	S	2005	2,088,000	Various
Water Main Replacement Allowance	M	O	NOI/NSI	USI	D/C	2005	12,294,000	Various
Water Main Replacement Allowance	M	O	NOI/NSI	USI	D/C	2006	18,314,000	Various
Water Main Replacement Allowance	M	O	NOI/NSI	USI	D/C	2007	32,632,000	Various
Water Main Replacement Allowance	M	O	NOI/NSI	USI	C	2008	34,800,000	Various
Palmer Woods Phase IV Improvements: Water System and Lateral Sewer Replacement	M	P	NOI/NSI	USI	C	2005	1,827,000	10
				Urban System Improvements - Subtotal			**$ 155,747,000**	

High Priority Projects - Water Supply System (41)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Water Meter Replacement and Automatic Meter Reading Equipment Installation in the City of Detroit	N	U	NOI/NSI	MM	D/C	2006	$ 97,500,000	Various
				Mechanical Maintenance - Subtotal			**$ 97,500,000**	
Instrumentation, Control and Computer System Program - Water Transmission System	N	U	NOI/NSI	CS	D/C	2005	$ 26,003,000	
Regional 800 MHz Radio System	N	U	NOI/NSI	CS	D/C	2005	18,650,000	
Expanded GIS Services & Implementation	M	U	AF/AS	CS	D	2005	4,441,000	
Information Systems Evergreening	M	O	NOI/NSI	CS	C	2005	2,250,000	
Information Systems Data Systems Improvements	N	P	NOI/NSI	CS	S/D/C	2005	2,000,000	
PBX & Telecommunications Systems Improvement & Replacement	M	P	NOI/NSI	CS	S/D/C	2006	3,000,000	
Low Voltage Wiring	M	P	NOI/NSI	CS	C	2005	3,000,000	
Information Systems Wide Area Infrastructure Improvements	N	U	NOI/NSI	CS	S/D/C	2006	13,100,000	
Department-wide Electronic Document Management System	M	U	NOI/NSI	CS	S/D/C	2006	4,500,000	
Secure Connection for Business & Process Control Networks and Related Systems Security Improvements	M	U	NOI/NSI	CS	S/D/C	2005	2,250,000	
Information Systems Local Area Network Improvements	M	P	NOI/NSI	CS	S/D/C	2005	7,000,002	
Department-wide Enterprise Application Integration (EAI)	N	P	NOI/NSI	CS	S/D/C	2005	3,250,000	
					Computer Systems - Subtotal		**$ 89,444,002**	

High Priority Projects - Water Supply System (41)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Overhaul of Major Electrical Power Distribution Equipment	M	U	NOI/NSI	GP	C	2005	4,167,000	Various
Facilities As-built Documentation Development and Maintenance Services	M	U	NOI/NSI	GP	D/C	2005	3,210,000	
Power Enhancement - Modifications to the Existing Generator Systems	M	U	NOI/NSI	GP	C	2005	8,810,000	Various
Power Enhancement - Primary Service Conversion and PCB Disposal	N	U	NOI/NSI	GP	C	2005	10,500,000	Various
Power Enhancement - New Generator Systems	N	U	AF/NSI	GP	C	2005	16,800,000	Various
Security Systems Upgrade for Various Booster Pumping Stations	M	U	NOI/NSI	GP	DB	2005	8,663,000	Various
As-needed Services for Concrete Testing, Geotechnical Soil Borings, Other Testing Services & Related Services	N	U	NOI/NSI	GP	D/C	2005	922,000	Various
Job Order Contracting: As-needed General Construction Services	M	U	NOI/NSI	GP	C	2005	3,050,000	Various
Roof & Pavement Asset Management Program & As-needed Engineering Services	M	P	NOI/NSI	GP	D	2005	2,500,000	Various
Asbestos Containing Material & Lead Based Paint Abatement for all DWSD Facilities	M	P	NOI/NSI	GP	C	2005	3,250,000	Various
Installation of Flow Measurement Devices at Water Treatment Plants & Booster Pumping Stations	N	P	AF/NSI	GP	D/C	2007	14,500,000	Various
Department-wide Roof Replacement and Repair III	M	P	NOI/NSI	GP	D/C	2005	2,500,000	Various
Vulnerability Assessment Upgrade	N	P	NOI/NSI	GP	C	2005	13,600,000	Various
						General Plant - Subtotal	**$ 92,472,000**	

High Priority Projects - Water Supply System (41)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Water Works Park Cranes and Clearance	N	P	NOI/NSI	WWP	D/C	2005	5,000,000	3
						Water Works Park - Subtotal	**$ 5,000,000**	
Springwells Water Treatment Plant - Filter Rehabilitation - Phase II	M	U	NOI/NSI	SP	C	2005	$ 5,036,000	
Springwells Water Treatment Plant Chemical Feed System Improvements	M	O	NOI/NSI	SP	DB	2005	8,110,000	
1958 Filter Rehabilitation, Heat/Dehumidify 1930 Filter Area	M	U	NOI/NSI	SP	D	2005	2,500,000	
1958 Filter Rehabilitation, Heat/Dehumidify 1930 Filter Area	M	P	NOI/NSI	SP	DB	2006	56,990,000	
Springwells Water Treatment Plant - Replacement of Washwater Pumps and Controls	M	P	NOI/NSI	SP	D/C	2006	2,850,000	
Springwells Water Treatment Plant - Auxiliary Facilities Improvements	M	P	NOI/NSI	SP	DB	2006	11,800,000	
Low Lift and High Lift Pump Station - Springwells Water Treatment Plant	N	P	NOI/NSI	SP	DB	2007	113,160,000	
Emergency High Lift Header Stabilization - Springwells Water Treatment Plant	M	P	NOI/NSI	SP	DB	2006	1,725,000	
Pre-treatment Improvements - SPWTP	M	P	NOI/NSI	SP	D/C	2007	164,300,000	
						Springwells - Subtotal	**$ 366,471,000**	

High Priority Projects - Water Supply System (41)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Flocculation/Sedimentation Basin Upgrades	M	P	NOI/NSI	NE	DB	2007	$ 39,252,000	1
Chemical Building/Process Mechanical Systems	M	P	NOI/NSI	NE	DB	2008	4,164,000	1
Major Pumping Equipment Improvements	M	P	NOI/NSI	NE	DB	2007	20,170,000	1
Intermediate Electrical/Mechanical System Improvements	M	P	NOI/NSI	NE	DB	2008	20,100,000	1
Sludge Treatment and Waste Washwater Treatment Facilities	M	P	NOI/NSI	NE	DB	2007	18,000,000	1
Northeast Water Treatment Plant - Filter Media Replacement and Related Filter Rehabilitations	M	P	NOI/NSI	NE	DB	2007	20,100,000	1
Northeast Water Treatment Plant - High Priority Improvements to the Major Pumping Equipment	M	P	NOI/NSI	NE	DB	2006	13,570,000	1
Northeast Water Treatment Plant - Rehabilitation of Filtration System	M	P	NOI/NSI	NE	DB	2005	31,100,000	1
						Northeast - Subtotal	**$ 166,456,000**	
Southwest Water Treatment Plant Intake Improvements & Rehabilitation	M	P	NOI/NSI	SW	C	2005	2,000,000	
High Lift and Low Lift Pump Station and Administration Building Improvements - SWWTP	M	P	NOI/NSI	SW	DB	2008	2,760,000	
Heating, Ventilation and Dehumidification Improvements: Plumping and Auxiliary Services: Miscellaneous Mechanical - SWWTP	M	P	NOI/NSI	SW	DB	2007	6,900,000	
Filtration Improvements - Southwest Water Treatment Plant	M	P	NOI/NSI	SW	DB	2007	28,750,000	
Electrical and Instrumentation and Controls - Southwest Water Treatment Plant	M	P	NOI/NSI	SW	DB	2008	12,075,000	

High Priority Projects - Water Supply System (41)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Chemical System and Chemical Building Improvements - Southwest Water Treatment Plant	M	P	NOI/NSI	SW	DB	2007	$ 6,095,000	
					Southwest - Subtotal		**$ 58,580,000**	
Waste Washwater Treatment Facility, Lake Huron Water Treatment Plant	M	U	NOI/NSI	LH	D/C	2005	$ 2,831,000	
Lake Huron Water Treatment Plant Clearwell No. 2 Rehabilitation	M	U	NOI/NSI	LH	D	2005	1,982,000	
Lake Huron Water Treatment Plant Clearwell No. 2 Rehabilitation	M	U	NOI/NSI	LH	C	2005	15,350,000	
					Lake Huron - Subtotal		**$ 20,163,000**	
Replacement of Equipment at W. Chicago, Electric, Farmington, Michigan & Roseville Booster Stations	M	U	NOI/NSI	PSR	D/C	2005	$ 3,927,000	Various
Reservoir Rehabilitation and Inspection Repair Program Management	M	O	NOI/NSI	PSR	D/C	2005	20,413,000	
Chesterfield Booster Pumping Station	N	P	NOI/NSI	PSR	D	2005	3,000,000	
Chesterfield Booster Pumping Station	N	P	NOI/NSI	PSR	C	2005	32,000,000	
West Service Center Improvements	M	P	NOI/NSI	PSR	C	2006	1,000,000	
Ypsilanti Station Improvements	M	P	NOI/NSI	PSR	S/D/C	2006	1,670,000	
Wick Pumping Station Electrical System Improvements	M	P	NOI/NSI	PSR	D/C	2006	5,100,000	
Bypass of Imlay Pump Station Toward Flint	N	P	NOI/NSI	PSR	C	2006	2,200,000	
Joy Road Pumping Station Improvements	M	P	NOI/NSI	PSR	C	2005	5,911,000	

High Priority Projects - Water Supply System (41)

Project	Project Status*	Project Time Line**	Impact on Budget***	Program Category	Project Phase****	Fiscal Year	Amount	Administrative District
Romeo Pumping Station	N	P	NOI/NSI	PSR	S	2007	2,000,000	
Romeo Pumping Station	N	P	NOI/NSI	PSR	C	2009	27,800,000	
						Pumping Station and Reservoirs - Subtotal	**$ 105,021,000**	
						All Categories - Total	**$ 1,227,830,002**	

Legend

*Project Status: M=project is maintaining current infrastructure; N=project will result in new development

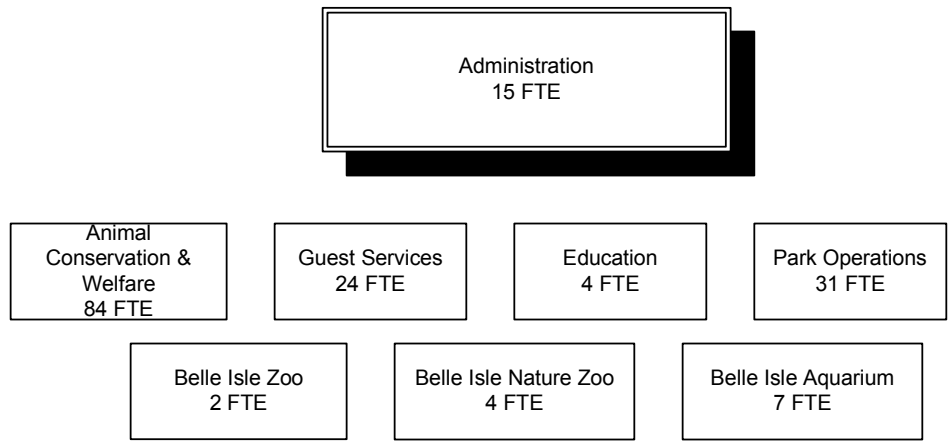
**Project Time Line: P=project is proposed; O=project is ongoing; U=project is one time only and is underway

***Impact on Operating Budget: AF=additional funding required; RF=results in reduction of funding; NOI=no operating impact

***Impact on Staffing Budget: AS=additional staffing required; RS=results in reduction of staffing; NSI=no staffing impact

****Project Phase: S=study; D=design; C=construction; CA=construction assistance; DB=Design Build

DETROIT ZOOLOGICAL INSTITUTE



kids cops clean

AGENCY MISSION

The purpose of the Detroit Zoological Institute is "Celebrating and Saving Wildlife."

MISSION STATEMENT

- Demonstrating leadership in wildlife conservation and animal welfare.
- Providing a broad audience with outstanding and unique educational opportunities that lead to the appreciation and stewardship of nature.
- Inspiring our community with engaging, meaningful and memorable experiences.
- Providing innovative zoological facilities that contribute to the region's economic vitality.
- Demonstrating organizational excellence consistent with a commitment to outstanding service and progressive resource management.

CURRENT FACILITIES

Detroit Zoo

The Detroit Zoo, opened to the public in 1928, is the largest component of the Detroit Zoological Institute. It consists of 125-acres located approximately 12 miles northwest of downtown Detroit, just north of I-696 and west of Woodward, in Royal Oak.

Built in the 1920's and 30's, the Detroit Zoo is noted as the first zoo in the United States to use barless exhibits extensively, reflecting its design by Carl Hagenback, generally recognized as the most important historical influence on modern zoo design. The Zoo is a natural habitat for more than 2,900 animals and 700 varieties of trees, shrubbery, and flowering plants.

In the last twenty-five years, five major new exhibits have been built and opened to the public. The Arctic Ring of Life opened to much fanfare as the largest polar habitat exhibit in the world and received the "Significant Achievement Award" in September 2003 from the American Zoo and Aquarium Association. In 2000, the National Amphibian Conservation Center opened to the public, and was recently recognized as the "Best New Exhibit" by the American Zoo and Aquarium Association. The Wildlife Interpretive Gallery opened in 1995. The Chimpanzee of Harambee opened in 1989 (in April 1996 Gorillas returned to the Zoo for the first time in fifteen years, and this complex was renamed the Great Apes of Harambee). Renovations to this exhibit were recently completed and include a number of improvements that provide better conditions for the animals, improved operation of the exhibit, and the enhancement of the public viewing experience. In 1977 the Free-Flight Aviary opened. Other significant exhibits include the Penguinarium (1968), Holden Museum of Living Reptiles (1960), Barnyard, Snow Monkeys, Prairie Dogs (renovated in 1999), Bear Dens, Wolverines (renovated in 2001), Kangaroos, Giraffes (renovated in 1994), Siberian tigers, African Lions, Hippopotamus, Elephants, Grevy's Zebras, Bactrian Camels, Scimitar-horned Oryx, Mandrill (1984), River Otters (1998) and a variety of other endangered species exhibits.

Among the Zoo's many features are the much photographed Rackham Memorial Fountain, the popular Miniature Railroad, presented in 1931 by the Detroit News and last renovated in 1984 and 1998, narrated tram tours, and an extensive wayfinding signage and interpretive graphic system designed to educate our visitors.

A new front entrance, provided through Michigan State Highway funding during the construction of I-696, was opened in 1986, and included a four-story parking garage, which increased total parking capacity to over 2,000 spaces.

Support facilities include five (4) refreshment stands (and 7 seasonal service carts), five (5) gift shops (two of which are open throughout the year), seven (7) service buildings (include the animal hospital and quarantine areas) and two (2) railroad stations.

The new state-of-the-art Animal Health Complex opened in May 2004. The 18,000 square foot building replaces the 50-year-old Holden Hospital as the primary care center for the Institute's collection of wildlife. The facility is composed of a central treatment room surrounded by radiology, surgery, a clinical pathology laboratory for running tests, and a pharmacy. Other areas include an ICU/nursery for critical care, a laboratory for water quality technicians, and a necropsy facility.

Belle Isle Nature Zoo

In FY 2004-2005, the former Belle Isle Nature Center has begun its dramatic renovation into the Belle Isle Nature Zoo. This unique blend of nature center and zoo, which is targeted for use by Detroit schools and Detroit families, will focus on native Michigan wildlife, including black bears, cougars, deer, wolves, small mammals and amphibian and reptiles. Programming will begin in the fall of 2004. Capital improvements are expected to be completed in FY 2007-08.

Belle Isle Zoo

The Belle Isle Zoo is located on Belle Isle, Detroit's island park on the Detroit River and is situated on 13-acres in the center of the island's 982 acres, between Central and Tanglewood Streets. The Belle Isle Zoo is closed to the public and is currently used to manage the Fallow Deer herd on Belle Isle. This facility will be replaced by the Belle Isle Nature Zoo (the former Belle Isle Nature Center) and will focus on native Michigan wildlife. The Belle Isle Zoo will no longer have operations once the Fallow Deer are moved to the Belle Isle Nature Zoo.

Belle Isle Aquarium

The Aquarium on Belle Isle is the nation's oldest continuously operating public aquarium, having opened in 1904. It was rehabilitated in 1955 and is open throughout the year. The Aquarium is well known among visitors for its freshwater stingray and electric eel exhibits. The Aquarium received significant structural repairs over the last two years.

There are over 55 exhibits with a total capacity of 32,000 gallons (roughly 5% of the average U.S. aquarium capacity), holding over 5,800 individuals representing 213 species.

FIVE YEAR HISTORY

This funding over the past five years was devoted to the following:

- **Phase II Mall Lighting/Electrical** – (2000) Funded by $300,000 in General Obligation Bonds.

- **National Amphibian Conservation Center** – (NACC) opened to the public in June of 2000. A new building for conservation and public exhibit of endangered amphibian species. Interpretive graphics highlighting the diversity of amphibian life are featured. No other center like this exists in the world. Funded with $5,600,000 in private funds, $300,000 in Obligation Bonds, and $200,000 in State Funds.

- **Arctic Ring of Life** – (ARL) opened in October 2001. It is the most ambitious project in the Zoo's history and the largest of its kind in the world. Funded with $3,400,000 in General Obligation Bonds, $9,800,000 in private funds, and $300,000 in State funding.

- **Belle Isle Aquarium** – Improvements completed in 2001**.**
  General Obligation Bonds of $600,000 in 2000-01

- **Belle Isle Zoo Improvements** – Improvements completed in 2001.

General Obligation Bonds of $600,000 in 2000-01

- **Restroom Upgrades** – All restrooms were renovated during 2002.
  General Obligation Bonds of $500,000 in 2000-01
  Investment Earnings of $300,000 in 2000-01
  General Obligation Bonds of $500,000 in 2001-02
  General Obligation Bonds of $600,000 in 2002-03

- **Great Apes of Harambee ("Chimp Moat")** – Construction completed in 2003.
  General Obligation Bonds of $800,000 in 2001-02
  General Obligation Bonds of $1,500,000 in 2002-03
  Private Funds of $500,000 in 2002-03
  General Obligation Bonds of $750,000 in 2003-04

- **Gunite Repair** – (1999-2000, 2003-04) This project involved repair of cracked exhibit gunite to comply with USDA regulations. Funded by General Obligation Bonds of $300,000 and investment earnings of $500,000 in 1999-2000 and by General Obligation Bonds of $500,000 in 2003-04.

- **The Ford Center for Environmental Education** - Opening in 2004.
  Private Funding of $9,950,000 in 2003-04.

- **The new Veterinary Hospital Complex** – Opened in May 2004.
  Private Funding of $4,850,000 in 2003-04.

- **Belle Isle Nature Zoo –** Facility renovations and improvements as well as modifications to meet ADA Title II compliance (accessible parking spaces, make existing restrooms compliant, add family restroom, etc.).
  General Obligation Bonds of $1,000,000 in 2004-05.

- **Technology Infrastructure –** Additions and upgrades to various locations throughout the Zoo including modifications to meet ADA Title II compliance.
  General Obligation Bonds of $250,000 in 2004-5.

- **Paving / Roads / Utilities –** Repair Roadways, Walkways and Utilities as well as modifications (such as ADA handicap ramps) to meet ADA Title II compliance in the park.
  General Obligation Bonds of $1,250,000 in 2004-05.

- **Administration Building / Holden Hospital –** Renovations to office space will accommodate additional staff, provide larger meeting areas, and provide full compliance with ADA Title II standards.
  General Obligation Bonds of $350,000 were budgeted for this project in FY 2004-05.

- **Ford Center For Environmental Conservation**
  The Ford Center for Environmental Conservation will host a variety of education opportunities for the casual visitor as well as students of all grade levels. Furthermore, through the use of distance learning we will be able to go well beyond the DZI's physical borders to a worldwide audience. .
  2003-04- $9,950,000 - Private Funds
  2004-05- $1,000,000 - Private Funds

- **Holden Museum of Living Reptiles (HMLR) – Air Conditioning –** Installation of air conditioning to provide better conditions for guests and staff.
  General Obligation Bonds of $200,000 were budgeted in FY 2004-05.

- **SOCWA DEQ / Freshwater Backflow Prevention Mandate –** Installation of back-flow prevention valves at the main connection and back-flow prevention at all buildings on Zoo grounds as required by law *(Safe Drinking Water Act* – Act 399,

P.A. 1976) under the Michigan Department of Environmental Quality. General Obligation Bonds of $500,000 in 2004-05.

PROPOSED FIVE YEAR CAPITAL PLAN

The plan for the Detroit Zoological Institute for the next five years is a mix of projects addressing renovation and infrastructure needs, as well as new development to improve conservation and education efforts, to provide new experiences for the visiting public, increase revenues, reduce expenses, and enhance safety.

The current five-year capital plan includes proposed public funding through the sale of General Obligation Bonds, private funding and state grants. Allocation for our new projects total $57,500,000 from 2005-10 (not including $100,000,000 in unprogrammed funds for the new riverfront aquarium).

- $6,250,000 is allocated for Belle Isle Nature Zoo (BINZ) renovations and improvements including modifications to meet ADA Title II compliance (handicapped striping in the parking lot, a family restroom, signs, etc.).
- $1,000,000 for Concessions facility improvements.
- $2,000,000 is allocated for Landscape irrigation and capital equipment purchases.
- $3,000,000 for Maintenance/Landscape buildings renovation.
- $750,000 for Penguinarium renovation/mechanical system to update and maintain a state-of-the-art exhibit.
- $1,250,000 is allocated to repair and improve the existing miniature Railway and Tramway system.
- $1,500,000 for Roof Repairs to exhibits will provide more durable and lasting roofs for many of the exhibit buildings and the Administrative Complex.
- $1,000,000 for additions and upgrades to the Technology infrastructure.
- $8,250,000 allocated for the new Turtle Conservation Center, a unique facility dedicated to preserving many of the seriously imperiled turtles and tortoises of the world.
- $1,500,000 is allocated to replace the existing Commissary with a new state-of-the-art facility for animal food delivery, storage, and preparation.
- $2,000,000 in Gunite (simulated rock) replacement and repair as required by USDA standards.
- $11,000,000 is allocated for the implementation of Phase I of the Physical Masterplan.
- $7,000,000 is allocated for the new National Invertebrate Conservation Center (NICC) a facility that will highlight the diversity of invertebrate life on earth, from marine forms such as jellies and sea stars, to land-dwelling tarantulas, ants, and dragonflies.
- $1,250,000 will be used to repair Roadways, Walkways, and Utilities in the park, many of which have reached the end of their useful service life.
- $4,000,000 is allocated for the renovation of the Primate House.
- $500,000 is allocated for Restroom renovations.
- $4,000,000 for an additional Parking Deck at the Detroit Zoo.
- $1,000,000 scheduled maintenance cycle for life support/exhibits and gunite at the Arctic Ring of Life exhibit (ARL).
- $250,000 scheduled maintenance cycle for Veterinary Complex.

CAPITAL RELATIONSHIPS: INTERDEPARTMENTAL AND KEY STAKEHOLDERS

Capital projects are developed with the input of a variety of key stakeholders, including: international experts in wildlife conservation and education; members of the Detroit community (through regular town hall meetings with the community, website surveys, etc.); with Commission members and other community leaders, and with other City of Detroit agencies.

The Detroit Building Authority is responsible for project administration on various department

projects. DPW/City Engineering is assisting with the paving of the main surface parking lot and the repair of pedestrian walkways in the park and related ADA compliance work. Municipal Parking is being consulted regarding ADA compliance issues. DWSD is assisting with the completion of work for the SOCWA DEQ freshwater backflow prevention mandate. ITSD is providing assistance with technology/infrastructure work as well as ADA compliance issues.

GOALS FOR CAPITAL PROGRAM

1. **Wildlife Conservation and Animal Welfare** – To maintain exhibit facilities in a safe and humane manner consistent with standards of the U.S. Department of Agriculture and the American Zoo and Aquarium Association (AZA).

2. **Provide Educational and Recreational Opportunities for Detroit Students and Families** – To maintain the visitor amenities and exhibit facilities to maximize the educational and recreational value of a zoo visit and to reinforce our reputation as a safe, user-friendly tourist destination. To provide safe, clean facilities where Detroit students and families can experience the world of wildlife through innovative exhibits and programs and which verifies our reputation as a world-class tourist destination.

3. **Engage the Community in Our Innovative Programs and Facilities** – To provide new and exciting exhibits to encourage new and repeat attendance, which will promote financial health by increasing revenues and community support. To provide a zoological resource worthy of a world-class city, which will add to the cultural and economic climate of the region, and enhance the city as a place to live, work and visit.

4. **Enhance Safety, Security, and Emergency Preparedness** – To ensure that programs and facilities meet and exceed industry standards for building safety and crime prevention. And which will be resistant to the effects of wide-scale emergencies and hazards.

5. **Environmental Protection**– To effectively conserve water and energy, and to manage the solid-waste stream by using methods of recycling water and air and installing more efficient heating systems. The Detroit Zoo also uses "green building" in its structures, in our efforts to minimize use of natural resources and uses recyclable materials wherever possible. The DZI recycles paper products and plastic waste as part of its overall recycling program.

RATIONALE FOR CAPITAL PROGRAM

The Zoological Park was constructed in the late 1920's and early 1930's. The Gunite structures, buildings and utilities must be continually evaluated and properly maintained and replaced. New animal display techniques require constant review. Those exhibits where constraints on the animal collection exceed what is considered to be humane have been closed or replaced. The United States Department of Agriculture (USDA), responsible for enforcing the provisions of the Animal Welfare Act, regularly inspects zoo exhibits and issues citations for improper housing and care. If corrections are not made within a designated time frame, the USDA has the power to close the Zoo.

The American Zoo and Aquarium Association, which establishes standards for zoo / aquarium management, evaluates member institutions every five years for accreditation. The adequacy of the physical facilities is an important component of this evaluation. Lack of accreditation would virtually eliminate our ability to acquire animals from other accredited zoological facilities and would restrict our ability to obtain federal permits for endangered species.

DETROIT ZOOLOGICAL INSTITUTE

To fulfill the mission of a zoo as a public recreational and education facility, new exhibits must be added to attract visitors and increase repeat visitations. Also, of paramount importance to the zoo's educational goals is the provision of an indoor facility suitable for conducting educational programs.

Finally, the fundamental needs of up to 18,000 daily visitors (including sufficient parking, ample and clean restrooms, plentiful refreshment opportunities, safe and well-illuminated public thoroughfares, first aid and security services, etc.) are critical to entice new visitors and retain customers for repeat visitation, in competition with southeast Michigan's plethora of other cultural and recreational opportunities.

The Detroit Zoological Institute has been identified in the Settlement Agreement between the City and the Department of Justice regarding non-compliance with the ADA Act. The ADA citations will be accommodated using private and currently allocated capital funds to implement physical modifications to facilities (including parking lot, signage, restrooms, misc. facility changes, etc.) with completion expected by end of calendar year 2004.

DETROIT ZOOLOGICAL INSTITUTE

BELLE ISLE NATURE ZOO (BINZ)

Capital improvements are expected to be completed in FY 2005-06 and will include modifications to meet ADA Title II compliance (handicapped striping in the parking lot, a family restroom, signs, etc.). This facility, targeted for use by Detroit schools and Detroit families, will focus on native Michigan wildlife and provide a view of the world that is not seen in an urban setting. In Fiscal Year 2004-05, general obligation bonds of $1,000,000 were appropriated for this project.

2005-06	$2,000,000	General Obligation Bonds
	250,000	Private Funds
2006-07	3,000,000	General Obligation Bonds
	250,000	Private Funds
2007-08	500,000	General Obligation Bonds
	250,000	Private Funds

CONCESSIONS

Renovation, remodeling, replacements and additions to current facilities. Modifications will meet ADA Title II compliance.

2007-08	$ 500,000	General Obligation Bonds
2008-09	500,000	General Obligation Bonds

LANDSCAPING

Various irrigation and planting projects at the Detroit Zoo, along with purchases of capital equipment.

2007-08	$ 500,000	General Obligation Bonds
2008-09	500,000	General Obligation Bonds
2009-10	1,000,000	General Obligation Bonds

MAINTENANCE / LANDSCAPE BUILDINGS

Repairs and renovations to the Landscape, Maintenance, and long-shed (storage) buildings including painting and window, garage door, and overhead door replacement, as well as, modifications to meet ADA Title II compliance. Repair of the steam tunnels to the Maintenance and Landscape buildings.

2007-08	$1,000,000	General Obligation Bonds
	2,000,000	Unprogrammed

PENGUINARIUM RENOVATION/MECHANICAL SYSTEM

This project involves upgrading animal life support equipment in this facility. Replacement equipment includes exhibit air handling, air filtration, water filtration, water-cooling, air conditioning and heat systems. General obligation bonds of $500,000 were appropriated for this project in FY 2003-04.

2007-08	$ 750,000	General Obligation Bonds

RAILROAD TRAINS / TRAMS

This project is for repair and improvement of the existing miniature railway and tramway system. It will also include modifications to meet ADA Title II compliance.

2007-08	$ 250,000	General Obligation Bonds
2008-09	250,000	General Obligation Bonds
2009-10	750,000	General Obligation Bonds

ROOF REPLACEMENT

This maintenance project will replace flat rooftops that have been repaired, but not replaced. For FY 2003-04, general obligation bonds of $200,000 has been appropriated for this project.

2009-10	$ 500,000	General Obligation Bonds
	1,000,000	Unprogrammed

TECHNOLOGY INFRASTRUCTURE

The technology infrastructure project involves adding additional phone cabinet for extensions in new hospital and education center. This includes upgrades to electrical wiring in various locations around the Zoo, including Administration server room, Africa Train Station, Africa Gift shop and other areas where network switches or video surveillance will be installed. Several Creston-controlled A/V media racks located in the new hospital, education building and Belle Isle Nature Zoo will help provide our visitors with valuable animal welfare and conservation information while allowing guest speakers more presentation options. This project will also include modifications to meet ADA Title II compliance. General obligation bonds of $250,000 has been appropriated in the FY2004-05 budget.

2009-10	$250,000	General Obligation Bonds
	750,000	Unprogrammed

TURTLE CONSERVATION CENTER

The Turtle Conservation Center is a unique facility dedicated to preserving many of the seriously imperiled turtles and tortoises of the world.

2005-06	$ 250,000	Private Funds
	1,000,000	State Funds
2006-07	3,000,000	Private Funds
	2,000,000	State Funds
2007-08	1,000,000	Private Funds
	1,000,000	State Funds

COMMISSARY

This project will replace the existing commissary with a new, state-of-the-art facility for animal food delivery, storage, and preparation.

	$1,500,000	Unprogrammed

GUNITE

Gunite maintenance is an ongoing U.S. Department of Agriculture (USDA) requirement, which is used to repair cracks, broken masonry or moat exhibit surfaces as necessary. Most of the Institute's exhibits contain this substance. In the FY 2003-04, general obligation bonds of $500,000 were budgeted for this project.

	$1,000,000	Unprogrammed

IMPLEMENTATION OF PHYSICAL MASTERPLAN – PHASE I

This would provide funds to begin implementation of the physical Masterplan, beginning with the demolition and replacement of deteriorating buildings such as the Bear Den and the Veldt building.

2007-08	$2,000,000	Private Funds
	1,000,000	State Funds
2008-09	3,000,000	Private Funds
	1,000,000	State Funds
	4,000,000	Unprogrammed

NATIONAL INVERTEBRATE CONSERVATION CENTER

The National Invertebrate Conservation Center (NICC) will highlight the diversity of invertebrate life on earth, from marine forms such as jellies and sea stars, to land-dwelling tarantulas, ants, and dragonflies.

2008-09	$2,000,000	Private Funds
	2,000,000	State Funds
	3,000,000	Unprogrammed

PAVING/ROADS/UTILITIES

Repaving of the main surface parking lot and the repair of pedestrian walkways in the park are ongoing projects. This project will include modifications to meet ADA Title II compliance by providing a total of 37 designated accessible parking spaces (including 4 van accessible spaces) as well as a sign at each space designating the space as accessible at the Detroit Zoo's Ten Mile Parking Lot and Parking Garage. General obligation bonds of $250,000 and $1,250,000 were budgeted for this project in FY2003-04 and FY2004-05, respectively.

2008-09	$ 750,000	General Obligation Bonds
	500,000	Unprogrammed

DETROIT ZOOLOGICAL INSTITUTE

PRIMATE HOUSE
This project includes the renovation of the public area and animal diet preparation area as well as the installation of air-handling systems.

$4,000,000 Unprogrammed

RESTROOM RENOVATIONS
This project will renovate all existing restrooms. This will include modifications to meet ADA Title II compliance by providing signs with raised and brailed characters, pictorial symbol signs as well as ADA compliant fixtures in the restrooms.

$ 500,000 Unprogrammed

PARKING DECK
With the addition of two new buildings, guests will spend more time on Zoo grounds and fewer parking spaces will turn over thereby decreasing multiple single-day usage. Currently with guest stays averaging 3-1/2 hours our parking lot can accommodate up to 4,000 cars. The National Invertebrate Conservation Center and the Turtle Conservation Center will increase attendance and guest stays necessitating the need for additional parking. This project will include the appropriate number of designated accessible parking spaces (including van accessible spaces) as well as a sign at each space designating the space as accessible as mandated by ADA Title II.

$4,000,000 Unprogrammed

ARCTIC RING OF LIFE (ARL)
Scheduled maintenance cycle for life support/exhibits and gunite to meet USDA and AZA standards.

$1,000,000 Unprogrammed

VETERINARY HOSPITAL COMPLEX
This facility opened in May 2004. This project includes funds for the five-year scheduled maintenance cycle in 2009-10. In FY2004-05, private funds of $1,000,000 was allocated for this project.

$ 250,000 Private Funds

AQUARIUM, DOWNTOWN
While not in the current capital spreadsheet, the Detroit Zoological Institute will design and build a new Riverfront Aquarium. This state-of-the-art $100-million dollar facility will attract 1.5 million visitors annually.

$100,000,000 Unprogrammed

City of Detroit
Proposed Capital Agenda
FY 2005-06 through 2009-10
Detroit Zoological Institute

	Project Status	*Timeline*	*Impact on Budget*	*Impact on Staffing*	*Impact on Budget*	*Funding Source*	*Auth Unissued*	*Budget 2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*Un-Program*	*Rec. 5-Year Plan Total*
Belle Isle Nature Zoo	N	P	AF	AS	$300	G.O.	$5,500	$1,000	$2,000	$3,000	$500				$5,500
Belle Isle Nature Zoo	M	O	AF	AS		P.F.			$250	$250	$250				$750
Concessions	M	O	NOI	NSI		G.O.	$1,000				$500	$500			$1,000
Landscaping	M	O	NOI	NSI		G.O.					$500	$500	$1,000		$2,000
Maintenance/Landscape Buildings/ Facilities	M	O	NOI	NSI		G.O.					$1,000				$2,000
Penguinarium Renovation/Mechanical System	M	O	AF	NSI	$15	G.O.	$750				$750				$750
Railroad Trains / Trams	M	O	NOI	NSI		G.O.	$500				$250	$250	$750		$1,250
Roof Replacement	M	O	NOI	NSI		G.O.	$635						$500	$1,000	$500
Technology Infrastructure	N	O	NOI	NSI	$35	G.O.		$250					$250	$750	$250
Turtle Conservation Center	N	P	AF	NSI		O.S.			$1,000	$2,000	$1,000				$4,000
Turtle Conservation Center	N	P	NOI	NSI		P.F.			$250	$3,000	$1,000				$4,250
Commissary	M	O	NOI	NSI		G.O.								$1,500	$0
Gunite / Exhibits	M	O	AF	NSI		G.O.								$1,000	$0
Implementation of Physical Masterplan Phase I	N	P	AF	AS		G.O.								$4,000	$0
Implementation of Physical Masterplan Phase I	N	P	AF	AS		O.S.						$1,000	$1,000		$2,000
Implementation of Physical Masterplan Phase I	N	P	AF	AS		P.F.					$2,000	$3,000			$5,000
National Invertebrate Conservation Center	N	P	AF	AS	$400	G.O.								$3,000	$0
National Invertebrate Conservation Center	N	P	AF	AS		O.S.						$2,000			$2,000

Project Status: M=project is maintaining current infrastructure; N=project will result in new development
Project Timeline: P=project is proposed; O=project is ongoing; U=project is one time and underway
Impact on Operating Budget: AF=additional funding is required; RF=results in reduction of funding; NOI=no operating impact
Impact on Staffing Budget: AS=additional staffing is required; RS=results in reduction of staffing; NSI=no staffing impact
Impact on Operating Budget $: annual additional funding or (reduction of funding) to operating budget

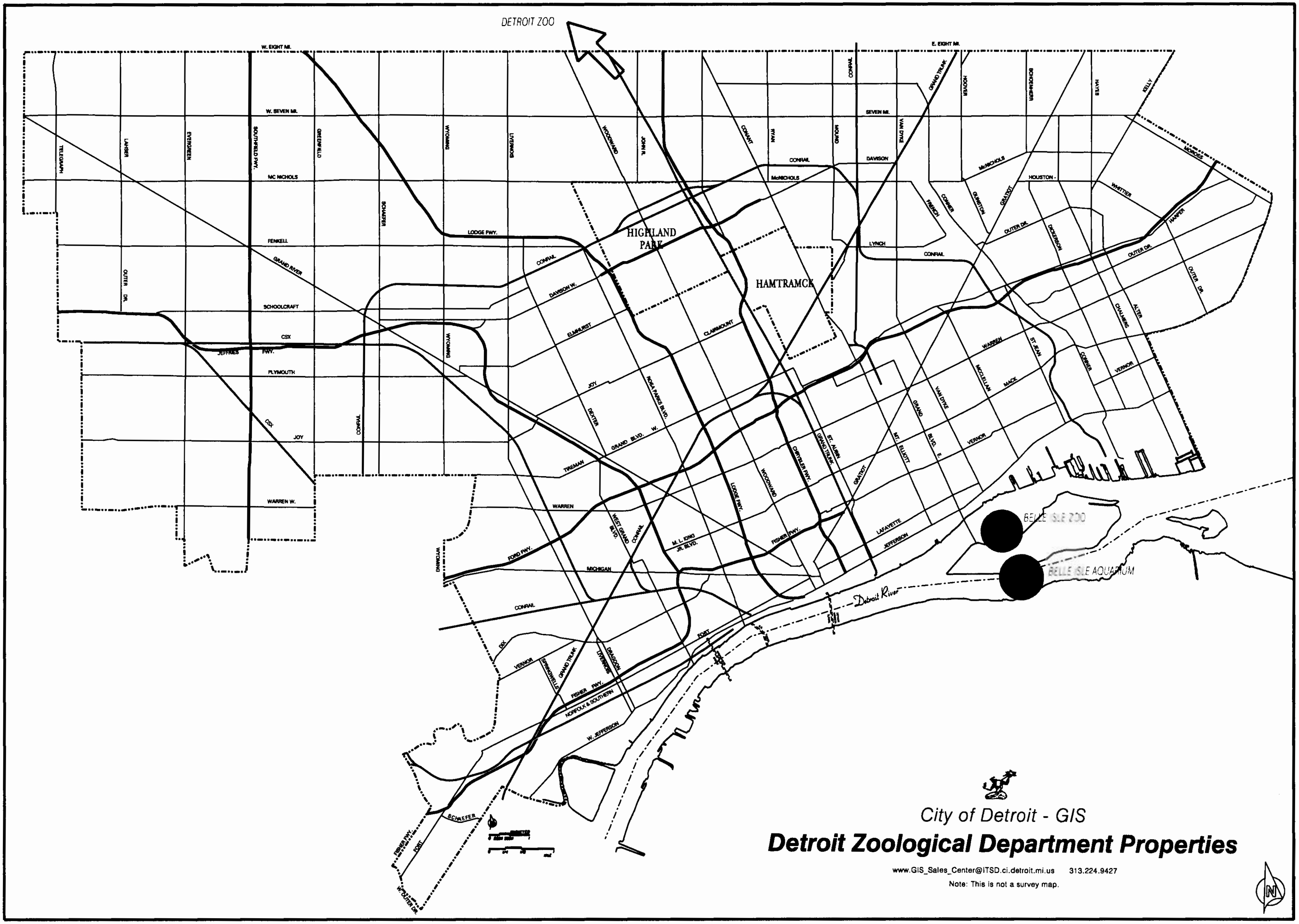
Detroit Zoological Institute

	Project Status	*Timeline*	*Impact on Budget*	*Impact on Staffing*	*Impact on Budget*	*Funding Source*	*Auth Unissued*	*Budget 2004-05*	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*Un-Program*	*Rec. 5-Year Plan Total*
National Invertebrate Conservation Center	N	P	AF	AS		P.F.						$2,000			$2,000
Paving/Roads/Utilities	M	O	NOI	NSI		G.O.		$1,250				$750			$750
Primate/Lion House Renovation	M	O	NOI	NSI		G.O.								$4,000	$0
Restrooms	M	O	NOI	NSI		G.O.								$500	$0
Parking Deck	N	P	AF	NSI		G.O.								$4,000	$0
Artic Ring of Life (ARL)	M	O	NOI	NSI		G.O.								$1,000	$0
Veterinary Complex	N	O	AF	AS		P.F.		$1,000					$250		$250
Aquarium, Downtown	N	P	AF	AS	$4,000	G.O.								$100,000	$0
SOCWADEQ/Freshwater Backflow Prevention Maintenance	M	U	NOI	NSI		G.O.		$500							$0
Holden Museum of Living Reptiles (HMLR) - Air Conditioning	M	U	NOI	NSI		G.O.		$200							$0
Administration Building / Holden Hospital	M	O	NOI	NSI		G.O.		$250							$0

Total by Funding Source		***Auth Unissued***	***Budget 2004-05***	***2005-06***	***2006-07***	***2007-08***	***2008-09***	***2009-10***	***Un-Program***	***5-Year Total***
	G.O.	*$8,385*	*$3,450*	*$2,000*	*$3,000*	*$3,500*	*$2,000*	*$2,500*	*$120,750*	*$13,000*
	P.F.		*$1,000*	*$500*	*$3,250*	*$3,250*	*$5,000*	*$250*	*$0*	*$12,250*
	O.S.		*$0*	*$1,000*	*$2,000*	*$1,000*	*$3,000*	*$1,000*	*$0*	*$8,000*

Total by Agency: Detroit Zoological Institute	***Budget 2004-05***	***2005-06***	***2006-07***	***2007-08***	***2008-09***	***2009-10***	***Un-Program***	***Grand Total***
	$4,450	*$3,500*	*$8,250*	*$7,750*	*$10,000*	*$3,750*	*$120,750*	*$158,450*

Project Status: M=project is maintaining current infrastructure; N=project will result in new development
Project Timeline: P=project is proposed; O=project is ongoing; U=project is one time and underway
Impact on Operating Budget: AF=additional funding is required; RF=results in reduction of funding; NOI=no operating impact
Impact on Staffing Budget: AS=additional staffing is required; RS=results in reduction of staffing; NSI=no staffing impact
Impact on Operating Budget $: annual additional funding or (reduction of funding) to operating budget


DETROIT ZOO
BELLE ISLE ZOO
BELLE ISLE AQUARIUM
Detroit River
HIGHLAND PARK
HAMTRAMCK
W. EIGHT MI.
E. EIGHT MI.
W. SEVEN MI.
SEVEN MI.
MC NICHOLS
McNICHOLS
FENKELL
SCHOOLCRAFT
CSX
JEFFRIES FWY.
PLYMOUTH
JOY
WARREN W.
TELEGRAPH
LAHSER
OUTER DR.
EVERGREEN
SOUTHFIELD FWY.
GREENFIELD
SCHAEFER
WYOMING
LIVERNOIS
LODGE FWY.
CONRAIL
GRAND RIVER
WOODWARD
JOHN R.
CONANT
RYAN
MOUND
VAN DYKE
GRAND TRUNK
HOOVER
SCHOENHERR
HAYES
KELLY
MOROSS
WHITTIER
HARPER
ALTER
CHALMERS
DAVISON
HOUSTON -
GRATIOT
GUNSTON
FRENCH
CONNER
LYNCH
DICKERSON
DAVISON W.
ELMHURST
CLAIRMOUNT
ROSA PARKS BLVD.
DEXTER
GRAND BLVD. W.
TIREMAN
WARREN
ST. JEAN
MCCLELLAN
MACK
VERNOR
ST. AUBIN
CHRYSLER FWY.
MT. ELLIOTT
GRAND BLVD. E.
LAFAYETTE
JEFFERSON
FISHER FWY.
M. L. KING JR. BLVD.
WEST GRAND BLVD.
FORD FWY.
MICHIGAN
FORT
DIX
SPRINGWELLS
LIVERNOIS
DRAGOON
NORFOLK & SOUTHERN
W. JEFFERSON
W. OUTER DR.
City of Detroit - GIS
Detroit Zoological Department Properties
www.GIS_Sales_Center@ITSD.ci.detroit.mi.us 313.224.9427
Note: This is not a survey map.
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2004